

VII MAJOR PROGRAMS, PROJECTS AND STUDIES

The end product of the analysis of the various travel corridors of the region and their interconnections is a series of detailed transportation improvement recommendations. These programs and projects were developed concurrently with related land use recommendations in response to identified needs particular to each corridor. The improvements are complementary; that is, they are corridor-specific solutions which optimize the overall movement of people and goods. When implemented in combination with the policies set forth in the previous chapter, they provide a unified approach to dealing with needs throughout the region. In some instances, the nature of the improvements are detailed sufficiently to assess the air quality and other benefits of their implementation. In other cases, no assumptions can be made which will permit an air quality analysis. The list of recommended studies at the end of this chapter results from the identification of needed improvements that fall into the latter category. In making this distinction it is recognized that individual projects are subject to detailed study of alternative improvement strategies and possible environmental impacts prior to advancement.

REGIONALLY SIGNIFICANT PROGRAMS

With the era of building new highways to solve traffic problems now passing, the Delaware Valley must manage its existing

transportation assets wisely through comprehensive maintenance programs, the use of new technologies and better management programs. The federal government, which traditionally funds 80 to 90 percent of new highway construction and highway widening projects, now emphasizes transportation solutions involving transit and other techniques for better *overall* system management.

System Preservation

If the region's highway and transit facilities are allowed to deteriorate, they will not be able to provide the capacity and performance for which they were designed. Many of the Delaware Valley's facilities require repair, rehabilitation and restoration because they have exceeded their useful design lives. Therefore, a significant emphasis of the plan must be to improve the condition of the existing highway and transit systems.

The region therefore needs to actively pursue repair, rehabilitation and restoration of its deteriorating transportation systems. In order to accomplish this program in conjunction with more extensive reconstruction and replacement projects, it is imperative that the region allocate a larger share of its financial resources to maintenance and reconstruction efforts.

Intelligent Transportation Systems

Strategies that will help the Delaware Valley to enhance the efficiency of the highway network through advanced technological communication systems are called Intelligent Transportation Systems

(ITS). Various forms of this technology include roadway sensors to monitor traffic flow, closed-circuit TV cameras, changeable message signs, highway advisory radio, electronic toll collection systems and vehicle navigation systems. Examples of programs in the region which make use of these emerging technologies include PennDOT's Transportation Incident Management System (TIMS) program and elements of NJ DOT's MAGIC program which gather and distribute timely information on highway performance for the purpose of incident management.

Other ITS technologies can make transit more efficient and passenger-friendly. Examples of transit-focused ITS include cellular vehicle tracking systems, which can give information on actual times of transit vehicle arrivals and departures, and comprehensive fare collection, which uses a single farecard to pay for all aspects of a transit ride, including tolls, parking and transfers. These ITS technologies make transit more effective in reducing the demand for automobile travel by increasing transit reliability, performance and ease of use. An example of a program which makes use of emerging transit ITS technology is the City of Philadelphia's Transit First program. This program installs new traffic control equipment which preempts traffic signal timings for transit vehicles.

Clearly, it is in the interest of the region to pursue the coordinated implementation of relevant technological innovations in the solution of transportation problems. In addition to the policy guidance from the

previous chapter, it is recommended that the region pursue a program of coordinated implementation of ITS technologies within the development of the Congestion Management System (CMS) for the region. It is further recommended that all evaluations for candidate transportation improvement projects consider the potential use of ITS and other new technologies.

Travel Demand Management

Moving People & Goods encourages several types of strategies that are aimed at improving mobility and managing the performance of the Delaware Valley's transportation assets. Strategies that seek to improve mobility by regulating the demand for travel are referred to as Travel Demand Management (TDM) strategies. These actions foster increased efficiency of the transportation system by influencing employee travel behavior by mode, time, frequency, trip length or route.

TDM actions may be grouped into three categories: Those that reduce the number or length of trips, those that shift trips to more efficient ways of travel (e.g., carpools, vanpools and transit), and those that shift trips to off-peak hours or uncongested routes. There are numerous types of TDM strategies to be employed in the region. Some strategies appear as policies in the previous chapter and others as projects below. Different types of TDM strategies in the region's TDM program include the following:

Ridesharing Using address and work commute information provided by local

employers and/or employees, commuters are matched with others making similar work trips. Transportation alternatives include public transit, vanpools and carpools.

Park and Ride Lots Used as a common meeting spot, these are areas dedicated for use by commuters to park vehicles while using public transit or participating in carpools or vanpools.

Parking Management/Pricing This is another way to discourage the proliferation of commuters driving alone to work by treating parking as a benefit, not a privilege. Proven methods of parking management include charging a small fee for parking if its currently free, offering prime spaces to regular carpools and vanpools, and even "renting" spaces to other businesses in the area.

Bicycle/Pedestrian Facilities To encourage employees who are able to walk or bike to work, employers would see to the provision of features such as bike racks, showers and lockers. Many employers are also involved in planning (and funding) bike and walking trails on or near their work sites.

Guaranteed Ride Home In order for any ridesharing or alternative commute program to be attractive to employees, there must be a sense of security that participating employees can leave the office for an emergency even when they do not have a personal vehicle on site. These strategies usually entail contracting with a rental car, taxi or vanpool service to provide transportation on an as-needed

basis to cover these instances, although company vehicles can also be used. A regional or other broadly based geographical program tends to be more cost-effective for participating employers.

Staggered Work Hours (Flextime) This strategy allows employees to set their own start and end times, under guidelines established by the company, to accommodate ridesharing and public transit schedules. For example, official office hours may be 8:30 a.m. to 5:00 p.m., but employees may be allowed to arrive from 7:30 to 9:00 a.m. and leave between 4:00 and 5:30 p.m., respectively. In most cases, employees can not flex their schedules on a daily basis, but must make a long term commitment to a regular schedule.

Compressed Work Week This option allows some employees to condense the hours they work into fewer days, thereby increasing the length of the work day, but decreasing the amount of days spent at the work site. The most popular programs are 4/40 (i.e., four days of ten hours each) and 3/36 (three days of 12 hours each).

Telecommuting An alternative to physical commuting, this option allows employees to work from home via computer, modem and fax. Companies must determine which employees are eligible and how frequently they can employ this option (e.g., several full days a week or a few hours each day).

Public Relations and Education A complete, targeted effort must be made to increase awareness of the various options available and their potential effects on traffic, air quality and local economies. These efforts should reach employers, employees, local residents and government officials.

REGIONALLY SIGNIFICANT PROJECTS

Regionally significant projects are grouped in this chapter by type of improvement, time period of implementation and by state. The definition of *regionally significant improvement* is a function of the nature and magnitude of the improvement as well as the size of the identified need. As such, individual projects which represent unique circumstances need to be scrutinized for specific mention in *Moving People and Goods*. The following table provides general guidance with respect to this definition for certain types of improvements. It is recognized that a broad spectrum of additional types of improvements are routinely necessary that are not considered regionally significant. While such projects are not treated individually in this document, factored costs are assumed in the financial feasibility assessment to insure their completion as directed by the policies of the plan.

Guidance for Regional Significance

Generally considered Regionally Significant

- New/expanded park & ride lots
- New/relocated interchange ramps

- Signal system coordination
- Corridor specific signal system improvements
- Access management programs
- Electronic toll collection
- Congestion pricing/toll structure
- MIS analyses

Generally considered Not Regionally Significant

- Transportation Centers without new connections to rail or new parking
- Bridge replacement
- Signing programs
- Preserving rights-of-way
- Intersection improvements
- Station car programs
- Incident management
- Enforcement measures
- Ordinances
- SOVCAP analyses
- Increased existing bus service
- New/expanded bus service

The improvement type categories, defined in the text, include: new corridor facilities and services, improved corridor facilities and services, improved transportation connections and systemwide improvements. A more complete listing of the regionally significant projects can be found in Appendix B. This listing includes examples of the systemwide improvements used to determine the net effect of these projects on regional air quality. It is recognized that substitute projects for those listed in this appendix and additional improvements of each type in the systemwide category will evolve in response to the region's ever changing needs.

The time period categories signify that projects are anticipated to be completed either before 2005 or between 2005 and 2020. These preliminary assumptions recognize the fluid nature of individual project development and implementation. The timeline is anticipated to be revised with each plan update to reflect more complete knowledge of each project. The year 2005 contains added significance in that shorter term projects are included in the year 2005 build alternative for air quality modeling. The distinction between short and long term projects considered many factors such as need, implementability, and comments from state and local officials.

Map 3 in Appendix A depicts the major, non-aviation related, transportation projects to be completed between 1995 and 2005. Map 4 similarly depicts projects to be completed between 2005 and 2020. Additional detailing of the aviation-related projects can be found in the *Year 2020 Regional Airport System Plan*.

New Corridor Facilities and Services

These improvements represent added opportunities to travel across or beyond the limits of the region by various travel modes. They may include new or reinstituted subway or commuter rail service, or new highways on new alignment. These improvements may be missing links needed to allow for the uninterrupted use of the transportation network. Additionally, they may become warranted where existing facilities can not accommodate long range demand through other means, including efforts to manage

that demand.

Between 1995 and 2005

New Jersey

- 1 Burlington-Gloucester Transit Lines
Center City to Mt. Holly and Glassboro
- 2 NJ 92 (Hightstown Bypass)
NJ 33 to CR 571

Pennsylvania

- 3 Newtown Rail Line Service
Philadelphia to Newtown
- 4 PA 63 (Woodhaven Road Extension)
US 1 to Philmont Avenue
- 5 Phila. Intl. Airport Commuter Runway
Philadelphia and Delaware Counties
- 6 R3 Regional Rail Line Restoration
Elwyn to Wawa

Between 2005 and 2020

Pennsylvania

- 7 US 202 Realignment
Montgomeryville to PA 611 Bypass

Improved Corridor Facilities and Services

These improvements represent major modifications to existing transportation facilities to accommodate anticipated demand. They may include demand management strategies, new transit service, ridesharing, or the widening of roadway. It is entirely likely that various types of improvements may be used in combination to optimize travel conditions in the corridor in question. Candidate improvement strategies to be considered in the alternatives analysis for individual projects, however, should not be restricted

to these types of improvements.

Between 1995 and 2005

New Jersey

- 8 CR 636 (Creek Road)
CR 613 to Moorestown-Centerton Road
- 9 CR 534 (Blackwood-Clementon Road)
NJ 42 to Laurel Road
- 10 CR 555 (Main Lake Road)
US 40 to Cumberland County line
- 11 CR 571 (Princeton-Hightstown Road)
Cranbury Road to Clarksville Road
- 12 CR 689 (Berlin-Cross Keys Road)
NJ 47 to US 30
- 13 Deptford Center Road Connection
to Almonesson Road
- 14 NJ 42 (North-South Freeway)
NJ 41 to I-295
- 15 US 1 (Brunswick Pike)
CR 533 to Alexander Road

Pennsylvania

- 16 Allendale Road
Wills Boulevard to Crossfield Road
- 17 Blair Mill Road
County Line Road to PA 63
- 18 Chestnut St Transitway Reconstruction
6th Street to 22nd Street
- 19 County Line Road
Buck Road to New Road
- 20 Dresher Road
PA 463 to PA 63
- 21 I-95 Intermodal Mobility Project
New Jersey line to Delaware line
- 22 Market-Frankford Reconstruction/New
Cars Bridge Street to 69th Street
- 23 North Philadelphia Light Rail Transit
Routes 15, 23 and 56
- 24 PA 63 (Welsh Road)
Tennis Avenue to Kimball Avenue
- 25 PA 291 (2nd Street/4th Street)
Ridley Creek to Trainer Borough
- 26 PA 413 (New Rodgers Road)
US 13 to north of Ford Road
- 27 PA 611 (Easton Road)
Blair Mill Road to I-276

- 28 Sumneytown Pike
South Broad Street to West Point Pike
- 29 Swedesford Road
Drummers Lane to Warner Road
- 30 US 1 (Baltimore Pike)
Kennett Square Bypass to Media Bypass
- 31 US 202
Delaware line to I-76
- 32 US 202 (DeKalb Pike)
Johnson Highway to Montgomeryville
- 33 US 322 (Conchester Road)
US 202 to PA 452

Between 2005 and 2020

New Jersey

- 34 CR 536 Spur (Williamstown-New
Freedom) NJ 42 to CR 706
- 35 CR 706 (New Brooklyn-Blackwood Rd.)
CR 536 Spur to CR 689
- 36 Kuser Road Connection
to Robbinsville Road
- 37 NJ 70 (Marlton Pike)
East of Marlton to Medford
- 38 US 130 (Bordentown-Burlington Road)
Wood Street to US 206
- 39 US 322 (Swedesboro-Bridgeport Road)
US 130 to New Jersey Turnpike

Pennsylvania

- 40 County Line Road
PA 309 to PA 611
- 41 Germantown Pike
PA 363 to North Wales Road
- 42 Henderson Road
South Gulph Road to US 202
- 43 PA 63 (Welsh Road)
US 202 to North Wales Road
- 44 PA 100 (Pottstown Pike)
US 30 to PA 401
- 45 US 30 (Lincoln Highway)
US 202 to Whitford Road
- 46 West Trenton Avenue
Delaware River to US 1

Improved Transportation Connections

Improving travel along the corridors through new or upgraded facilities can accentuate the need to provide new and/or improved access opportunities to these facilities. These types of improvements address missing and bottleneck highway and transit access locations. New facilities may include highway interchanges, train stations, transportation centers (which connect travel modes) and similar features. Improved facilities include major parking lot expansions, station relocations for new intermodal connections, and other modifications.

Between 1995 and 2005**New Jersey**

- 47 Burlington City Transportation Center
Broad Street and High Street
- 48 Cherry Hill Mall Transportation Center
NJ 38 and Haddonfield Road
- 49 Hamilton Transit Complex
I-295 and Northeast Rail Corridor
- 50 Moorestown Mall Transportation Center
NJ 38 and Lenola Road

Pennsylvania

- 51 Bensalem Transportation Center
Station Avenue near Bristol Pike
- 52 Chester Transportation Center
Avenue of the States and 6th Street
- 53 FastShip Terminal
Delaware River at Terminal Site
- 54 Frankford Terminal
Frankford Avenue and Bridge Street
- 55 I-95 Connection with Aramingo and
Torresdale Avenues
I-95 at Betsy Ross Bridge Interchange
- 56 I-95/PA Turnpike Interchange
I-95 at I-276
- 57 King of Prussia Transportation Center

- US 202 and North Gulph Road
- 58 Lansdale Transportation Center
Main Street and Green Street
- 59 North Philadelphia Trans. Center
Broad Street and Glenwood Avenue
- 60 Paoli Transportation Center
R5 Regional Rail line at old Paoli yard
- 61 Radnor Transportation Center
King of Prussia Rd. and Matsonford Rd.
- 62 Thorndale Train Station
US 30 Business near PA 340
- 63 West Chester Transportation Center
Market Street and Matlack Street
- 64 Woodbourne Transportation Center
Woodbourne Road at Railroad Crossing

Between 2005 and 2020**New Jersey**

- 65 Atlantic City Expressway Interchange
at CR 689 (Cross Keys Road)

Pennsylvania

- 66 Market West Subway Station
Market Street and 21st Street
- 67 Media Transportation Center
Orange Street and Media Station Road
- 68 Neshaminy Mall Transportation Center
US 1 and Rockhill Drive
- 69 Overbrook Transportation Center
City Avenue and 63rd Street

Systemwide Improvements

Additional improvements need to be made throughout the region to enhance the performance of the transportation system. In some cases, deficiencies exist due to the age or the incomplete nature of the system. In other cases, facilities or services have been overtaxed beyond their original intended use and need to be improved. In still other instances, new features or services are required to redirect

the demand for use of the facility or service. Examples of improvements in this last category include carpool/vanpool staging and bicycle/ pedestrian features.

Improvements anticipated in the plan have been divided into nine categories. Specific improvements assumed in determining the impacts of the plan are detailed in Appendix B along with further detail regarding the previously mentioned projects.

Types of Additional Improvements

- ☐ Reconstruction of Major Facilities
- ☐ Transit Facilities, Vehicles and Services
- ☐ Bicycle and Pedestrian
- ☐ Park and Ride Lots
- ☐ Ramp Construction

- ☐ Advanced Signal Systems and Signing
- ☐ Intersections and Spot Locations
- ☐ Access Controls
- ☐ Congestion Management Systems

RECOMMENDED STUDIES

In some instances, the nature of the improvement designed to meet an identified transportation need cannot be stated in sufficient detail to warrant incorporation as a project in the plan. In other cases, the plan proposes a specific transportation improvement, even though it may be modified in the future. This is done both to evaluate the cumulative



I-476 in Delaware County

effects of all improvements and to give citizens a better overall understanding of the region's total transportation vision.

Planning studies are required for these locations to determine an optimal approach. In addition, ISTEA requires that a major investment study (MIS) be completed by the metropolitan planning organization before a major highway or transit project can receive federal funds. Within the list below, study corridors and areas currently undergoing MISs are denoted by **boldface**.

As these studies are completed and projects become identified, they will be included in future updates of *Moving People and Goods*. At present, no funds are identified in the financial plan portion of this document to provide for the implementation of any of these potential transportation improvements. ☐

Major Study Corridors and Areas

- S1 Burlington-Gloucester Transit Lines**
Center City to Mt. Holly and Glassboro
- S2 Cross County Transit Line**
Glenloch to Trenton
- S3 Exton Area Transportation Study
US 30 and PA 100
- S4 52nd Street Station Restoration
R5 Regional Rail Line at 52nd Street
- S5 Hatfield Area Transportation Study
PA 9 to PA 309
- S6 I-476 (Mid-County Expressway)
I-276 to I-95
- S7 I-95 Intermodal Mobility Project**
New Jersey line to Delaware line
- S8 I-95/I-276 Interchange**
- S9 I-276 (Pennsylvania Turnpike)
I-76 to Norristown Interchange
- S10 Northeast Philadelphia Public Transit Study, including:

- Northeast Metro Transit Line
Center City to Fox Chase/Byberry via western corridor
- Northeast Rapid Transit Line
Center City to Byberry via central corridor

- S11 NJ 92 (Hightstown Bypass)**
NJ 33 to CR 571
- S12 NJ Turnpike
Delaware Memorial Bridge to Exit 4
- S13 PA 41
Delaware line to PA 926
- S14 PA 63 (Woodhaven Rd. Extension)**
US 1 to Philmont Avenue
- S15 PATCO Extension
16th to 21st/30th Street
- S16 Pennsylvania Turnpike-Northeast Extension Interchange Study
Norristown to Quakertown Interchanges
- S17 Philadelphia Zoo Station
Rail lines adjoining Zoo property
- S18 Phoenixville Area Transportation Study
US 422 to PA 724
- S19 Quakertown Area Needs Study
PA 663 in vicinity of Quakertown
- S20 Regional High Occupancy Vehicle (HOV) Network Study
- S21 Regional Rights-of-Way Preservation Study
- S22 R3 Service Extension
Wawa to West Chester
- S23 SEPTA Regional Rail Division Improvement Study
- S24 Schuylkill River Corridor Study
Pottstown to Center City, including:
 - I-76 (Schuylkill Expressway)
I-276 to I-476
 - King of Prussia Rail Connection
Norristown High Speed Line to Shopping Mall
 - Schuylkill Valley Metro
Norristown to Pottstown
 - US 422 (County Line Expressway)
US 202 to PA 363
- S25 US 322
NJ Turnpike to NJ 42
- S26 US 202 Realignment**
Montgomeryville to PA 611 Bypass
- S27 US 202
Delaware line to I-76

VIII FINANCIAL PLAN

BACKGROUND

Moving People and Goods was prepared within prescribed metropolitan planning guidelines. Two of the most significant federal requirements impacting regional long range plans are that they be (1) financially constrained, and (2) demonstrate conformity with federal air quality guidelines.

With respect to the financial constraint, federal law specifically states that long range plans must include a financial element that demonstrates the consistency of proposed transportation investments with known and projected sources of revenue. The financial element must indicate resources from both public and private sources that are currently available or reasonably expected to be available for transportation uses over the period of the plan, as well as recommend innovative financing techniques for those resources not currently available.

FINANCIAL CONSTRAINT

The financial planning element of *Moving People and Goods* fulfills a new ISTEA requirement by preparing revenue estimates for existing and proposed funding sources and comparing them with the estimated costs of the various transportation improvements necessary to maintain, improve, and operate the regional transportation system.

The financial planning element assesses the capital investments and financing strategies necessary to:

- (1) ensure the preservation of the existing metropolitan transportation system, including requirements for operational improvements, resurfacing, restoration, and rehabilitation of existing and future major roadways, as well as operations, maintenance, modernization, and rehabilitation of existing and future transit facilities,
- (2) make the most efficient use of existing transportation facilities to relieve congestion and maximize the mobility of people and goods, and
- (3) contribute to the attainment of the national ambient air quality standards set forth in the Clean Air Act.

The financial planning element has four components. The first provides an overview of traditional federal, state, regional, and local funding sources. Building on this review, the second component presents a comprehensive survey of potential new sources of revenue. This is the first time that innovative funding sources have been included in the region's long range transportation plan. The costs of the projects and programs to be included in the plan are then estimated and summarized in the third portion. Estimates of anticipated revenues from the traditional funding sources are set forth and compared to projected project and program costs in the fourth section of the financial planning element.

Available Resources—Traditional Sources of Funding

Federal Funding Sources

A major source of funds for capital improvements to the transportation system is the federal government. Typically, Congress passes legislation authorizing the federal government to establish funding programs for surface transportation every six years. The current act, the Intermodal Surface Transportation Efficiency Act (ISTEA), was signed into law in December 1991. This Act provides funding authorizations totalling \$155 billion nationwide for highways and mass transportation for FY 1992-1997.

The Highway Trust Fund, which is the source of funding for most of the federal programs outlined below, was extended to the end of FY 1999 under ISTEA. The Highway Trust Fund is divided into a Highway Account and a Mass Transit Account. These accounts receive their funding primarily from the federal taxes on motor fuels. Currently the tax rate for gasoline and special fuels is 14 cents per gallon (2.5 cents goes toward deficit reduction) and 19.5 cents on diesel fuel. ISTEA directs \$122 billion from the Highway Trust Fund into the Highway Account, \$18 billion into the Mass Transit Account. An additional \$15 billion from the General Fund of the U. S. Treasury is anticipated for mass transit.

Authorization acts only establish the program authority and upper limits of funding over the life of the act. Congress must follow up each year with a separate appropriation act to fund these programs.

Often, the appropriated amount is lower than the authorized amount. This is particularly true for funding from the General Fund for mass transit. For purposes of financial planning, states and MPOs are permitted to assume authorized funding levels.

Federal Highway Programs: Federal assistance for highway programs is apportioned to the states and administered by the Federal Highway Administration (FHWA). ISTEA restructured previous highway programs which had been directed primarily toward the construction and improvement of four federal-aid systems: Interstate, Primary, Secondary, and Urban. This structure was replaced with the National Highway System (NHS), which includes the Interstate system and additional routes of national interest; a Bridge Program; and two new block grant type programs—the Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality Improvement Program (CMAQ). The STP is available for all roads not functionally classified as local or rural minor collectors. CMAQ funds are available for transportation projects that help attain the national air quality standards in areas designated as nonattainment for ozone and carbon monoxide by the Clean Air Act.

ISTEA provides state and local governments more flexibility in determining transportation solutions by permitting certain categories of federal funds to be used for either transit or highway capital expenses. Generally, federal aid programs require a minimum 20 percent local match with the exception

of interstate construction and maintenance which requires a 10 percent match.

The *Interstate System*, although part of the NHS, will receive separate funding totaling \$7.2 billion nationwide to allow for its completion and \$960 million for Interstate Substitution Projects. Once all remaining segments of the Interstate system are completed, the Interstate Construction and Interstate Substitution categories will no longer be available. Therefore, DVRPC has combined these funds with the NHS category for purposes of projecting resources for the plan.

Funds from the *Interstate Maintenance* program may be used for rehabilitation, restoration and resurfacing of the Interstate system. Interstate Maintenance funds are distributed based upon lane miles and vehicle miles travelled on the Interstate facilities. Pennsylvania receives approximately \$71 million annually in Interstate Maintenance funds while New Jersey receives about \$31 million.

In the DVRPC region, the *National Highway System (NHS)* consists of major roads, including all interstate routes, a large percentage of urban and rural principal arterials, and other strategic highway connectors, for a total of 1,290 miles of highway (155,000 miles nationwide). The NHS funding level nationwide is \$21 billion for the six years of ISTEA (an average of \$3.5 billion per year) and funds are distributed to states in the same way as for the Surface Transportation Program (STP) outlined below. Up to 50 percent of NHS funds may be transferred to the STP program by the state. Pennsylvania receives about

\$329 million annually in combined NHS and Interstate funds while New Jersey receives \$160 million.

The *Surface Transportation Program (STP)* is a new block grant program that may be used by the states and localities for a wide variety of projects, except on roads that are functionally classified as local or rural minor collectors. These funds are not restricted to federal aid roads and may be used for bridge projects. Transit capital projects are also eligible under this program as are travel demand management, marketing, and planning programs. The total national funding for STP over the six years of ISTEA is \$23.9 billion, or an average of \$3.98 billion per year. The formula for distributing these funds to the states is based upon each state's FY 1987-1991 share of total national funding, excluding apportionments for Interstate Maintenance and Bridge programs. Once these funds are distributed to the states, each must set aside 10 percent for safety projects and 10 percent for transportation enhancements. The State must divide 50 percent of the funds between each of its areas over 200,000 in population and the remaining areas of the State. The last 30 percent can be used anywhere in the state. Pennsylvania receives \$199 million annually in STP funds and New Jersey receives \$120 million.

The *Congestion Mitigation and Air Quality Improvement Program (CMAQ)* provides funding for transportation projects or programs that will contribute to the attainment of the national ambient air quality standards in Clean Air Act non-attainment areas for ozone and carbon

monoxide. Total ISTEA funding for this program nationally is \$6 billion, or an average of \$1 billion per year. The funds are distributed based on each state's share of the population in air quality non-attainment areas weighted by degree of air pollution. Pennsylvania and New Jersey receive \$60 million and \$55 million per year, respectively.

The Bridge Replacement and Rehabilitation Program provides federal funding assistance for any bridge on a public road. Total funding through ISTEA for this program is \$16.1 billion nationwide, or \$2.7 billion per year. Forty percent of a state's bridge funds may be transferred to the NHS or the STP. Both Pennsylvania and New Jersey have taken advantage of this transfer provision. Pennsylvania receives \$242 million annually while New Jersey receives \$88.5 million.

Federal Public Transit Programs: Federal funds for public transit are distributed to metropolitan regions rather than to the states. Funds are administered by the Federal Transit Administration (FTA). The funds are apportioned to regions both through legislative formula and on a competitive (FTA discretionary) basis. The public transit formula and discretionary programs requirements under ISTEA remain basically unchanged from previous law. The formula grant programs are Section 9, 16, 18, and Section 3A Rail Modernization (a new feature of ISTEA). Section 3B New Starts and Section 3C Bus remain discretionary programs. ISTEA has changed the matching requirements for transit capital projects, setting it at a minimum of 20

percent, which is identical to most highway program matching requirements.

A total of \$31.5 billion is authorized for public transit projects over the six-year period of ISTEA. Funding for public transit under ISTEA is proposed to increase substantially in the last year of ISTEA. However, over 40 percent of this funding must come from the general treasury funds appropriated annually by Congress. Listed below is a brief narrative on the various Federal Transit programs and an indication of the average annual funding to be received.

The Section 3 Discretionary and Formula Capital Program provides funding for upgrading existing rail lines, building new fixed guideways (rail lines, busways, etc.), and other transit capital projects. The total ISTEA funding authorization is \$12.4 billion for the six years of ISTEA. There are three components to the Section 3 program. Funds are divided as follows: 40 percent for *Section 3A Rail Modernization*; 40 percent for *Section 3B New Starts*; and 20 percent for *Section 3C Bus* and other transit projects.

Authorization for Rail Modernization is \$5 billion over the six years. These funds are allocated to regions by formula rather than on a discretionary basis and this region anticipates receiving \$108 million annually in Section 3A Rail Modernization funds. Federal authorization for New Starts also totals \$5 billion. A substantial number of New Starts projects are earmarked in the ISTEA and thus funding is limited for other new starts. Authorization for Section 3C Bus and other projects totals \$2.5 billion over the six years of ISTEA. These funds are granted based upon

discretionary criteria and are available competitively nationwide.

The *Section 9 Formula Grant Program* provides funds on the basis of a statutory formula to all urbanized areas in the country. The program is authorized at \$16.1 billion for the six years of ISTEA. Funding under this program increases during the last year of the program. Section 9 funds can be utilized for both capital and operating costs. Use of the funds for operating costs are limited by statute. Section 9 funding estimated to be available to the region annually is \$96 million, with capital funds at approximately \$62 million and operating funds limited to \$34 million.

Section 16 provides funding for transportation services for elderly and disabled persons. Funds may go to private, non-profit organizations or to public bodies for capital costs or for capital costs of contracting for services. The program authorization is \$428 million nationwide for the six year period of ISTEA. Funds are allocated to states based upon statutory requirements and are provided to the applicants.

The *Section 18 Program* provides funds for transit service in rural areas. These funds are allocated to rural areas in states based on a statutory formula. The program is funded nationally at \$937 million for the six years of ISTEA. This region anticipates receiving approximately \$330 thousand annually.

Federal Goods Movement Programs: Prior to ISTEA, federal assistance for goods movement programs in the region was

primarily administered through the Federal Railroad Administration (FRA). The FRA provides discretionary federal funding to the states for eligible capital improvements to facilitate the movement of goods. FRA grants to the region have decreased in value over the years. It should be noted that state funding sources provide financial support for railroad improvements that are not federally eligible. FRA funds are not accounted for in the resources available to the region.

In addition to goods movement by rail, the region also moves goods through airports and the river ports located on both sides of the Delaware River. There are no ongoing federal programs to improve the ports, other than the opportunities established through ISTEA for land-side improvements.

Federal Aviation Funds: Traditionally, FAA has funded airport improvements through the Federal Aviation Trust Fund. This fund has provided 75% of eligible project costs at Philadelphia International Airport (PHL) (including safety and capacity projects but not terminal improvements) and 90% of eligible safety and capacity projects at all other eligible airports. One third of the federal funds traditionally received by PHL are formula based on passenger levels, and the remaining federal funds are discretionary, therefore projects at PHL and other airports in the region must compete with projects from around the country.

Since 1992, federal annual airport funding levels have been reduced by Congress, partially in response to the institution of the locally collected Passenger Facility

Charge (PFC) and also in response to deficit reduction trade-offs in Congress. With less federal dollars and more competition, fewer airports in the region will receive public capital grants in the future.

State Funding Sources

In addition to federal funding sources, both states provide substantial levels of funding for transportation improvements. State funds are used to provide much of the 20 percent match required for most federal programs and to undertake certain projects entirely with state funding. Both states provide capital and operating assistance for highway and public transit projects. New Jersey has elected to utilize a new provision in ISTEA which allows the state to take certain credits for toll revenues reinvested in the system by its toll authorities, thereby offsetting the required 20 percent match for federal projects.

Pennsylvania: *Pennsylvania Act 26* was passed in 1991 to provide a dedicated funding source for Pennsylvania's public transit systems. Act 26 funds are used for capital needs to rebuild and maintain the public transit infrastructure of the 38 transit agencies in Pennsylvania. In order to finance this legislation, the state has established the Public Transportation Assistance Fund (PTAF). This fund derives revenue from several divergent sources. The following taxes were established or increased in order to underwrite this fund: *Tire Fee*—a flat fee of \$1 per new highway motor vehicle tire sold; *Motor Vehicle Lease Additional Tax*—a 3 percent tax imposed on the total lease of a motor vehicle in addition to the

current tax; *Motor Vehicle Rental Fee*—a \$2 per day fee imposed on the rental of a motor vehicle; and *Utility Realty Additional Tax*—an addition of 12 mills per dollar to the current Utility Realty Tax levied against regional public utility companies.

Act 26 taxes generated approximately \$159 million in revenue for the PTAF in FY 1994. After set-asides of \$8 to \$9 million per year, SEPTA receives approximately 70 percent of the remaining funds. SEPTA is permitted to spend approximately 30 percent of the funds it receives for asset maintenance (operating costs). The remainder must be used for capital projects. FY 1995 revenues are estimated to be the same as for FY 1994. Act 26 also requires Bucks, Chester, Delaware, and Montgomery Counties and the City of Philadelphia to provide a match equal to one-thirtieth (1/30) of the total cost for capital projects.

The *Pennsylvania Motor License Fund* is a special fund composed of monies received from the Liquid Fuels and Fuel Use Taxes, driver license and vehicle registration fees, aviation revenues, federal aid for highway and aviation purposes, contributions from local subdivisions for highway projects, and miscellaneous highway revenue. The fund provides for highway and bridge improvement, design, maintenance and purchase of rights-of-way, as well as aviation activities and Department of Transportation licensing and safety activities. It also finances the State Police highway patrol operations and pays subsidies to local subdivisions for construction and maintenance of roads. The Motor License Fund generates

approximately \$1.5 billion each year. The following discussion explains the major state sources of income to the fund. The use of aviation income is restricted and therefore is not taken into consideration in this plan.

The *Liquid Fuels Tax* is based on the number of gallons of liquid fuel (primarily gasoline) used, sold or delivered within the Commonwealth. The present tax rate is 12 cents per gallon. The *Fuel Use Tax* applies to diesel fuel and any fuel not taxed under the Liquid Fuels Tax Act. It is based on the number of gallons of fuel used in the Commonwealth by dealer-users.

The *Motor Carriers Road Tax* is levied on motor carriers operating vehicles with a gross weight or registered gross weight in excess of 17,000 pounds. The tax is comprised of: a 12 cent per gallon tax; an oil company franchise tax element based on 115 mills of the average wholesale price of motor vehicle fuels; and a 6 cent per gallon surtax. The *Motorbus Road Tax* is imposed on the amount of motor fuel used by bus companies in their operations on highways within the Commonwealth. The tax contains the liquid fuels tax rate of 12 cents per gallon and an oil company franchise tax element based upon 115 mills of the average wholesale price of motor fuels. In addition to the Motor Carriers and Motorbus Road Taxes, an identification marker is required on vehicles subject to these taxes at a flat fee of \$5 per vehicle annually.

Motor Licenses and Fees include revenue from the collection of fees for the

registration and titling of motor vehicles and for the issuance of learners' permits, operators' licenses, certificates of title and transfers of registration.

The *Oil Company Franchise Tax* is an excise tax on oil companies for the privilege of exercising their corporate franchise, doing business, employing capital, owning or leasing property, maintaining an office, or having employees in the Commonwealth. The current tax rate is 115 mills on the average wholesale price of motor fuels used for motor vehicles. Part of these funds are available to the Motor License Fund on an unrestricted basis. Restricted funds are to be used as follows: 42 percent for maintenance, 17 percent for capital projects, 13 percent for bridges, 12 percent for municipalities, 14 percent for toll roads, and 2 percent for county or forestry bridges.

Other Revenues that flow to the Motor License Fund include revenues from certain fines, a Gross Receipts Tax (8 mills) on for-hire passenger or property carriers operating on routes not entirely within the Commonwealth, interest income, and sales of vehicles, property or information.

General Budget Appropriations are made annually by the Commonwealth of Pennsylvania to provide additional operating assistance to public transit providers. This operating assistance is discretionary and varies annually. SEPTA receives 70 percent of the statewide amount. In FY 1995, SEPTA will receive \$171.5 million of the \$238 million total. A 25 percent match is provided by the five

Pennsylvania counties in the DVRPC region.

New Jersey: The *New Jersey Transportation Trust Fund (TTF)* is a special financial authority established by New Jersey to provide state funds for highway and public transit projects. The Trust Fund Account of the state's General Fund is credited with portions of funds received by the treasury from the Motor Fuel Tax, Toll Authority Payments, and certain Other Vehicle Fees and Taxes. The Trust Fund authority is established by authorizing legislation, which was renewed during 1995.

The *Motor Fuel Tax* applies to sales of gasoline, diesel fuel, or liquefied petroleum gas and compressed natural gas used in motor vehicles on public highways. The general rate of tax (gasoline) is 10.5 cents per gallon. One-half that rate (5.25 cents per gallon) is applied to petroleum gas and liquefied or compressed natural gas sold or used to propel motor vehicles on public highways. The diesel fuel rate is 13.5 cents per gallon of which 3 cents per gallon is refundable for fuel used in passenger automobiles and motor vehicles less than 5,000 pounds gross weight. In FY 1994, the Motor Fuel Tax yielded approximately \$276.5 million in TTF revenue.

Of the funds generated by the 10.5 cent gasoline tax, 2.5 cents per gallon is constitutionally dedicated to the TTF account. The TTF dedicated share of this tax will rise to 7.5 cents in 1997, 8.0 cents in 1999 and 9.0 cents in 2000. The difference remains in the state's general fund.

The *Toll Authority Payments* are amounts established through periodic contracts between the state and its various toll authorities to be paid to the state from net authority income after all bond obligations are met. These payments to the TTF will total approximately \$24.5 million per year.

The *Other Vehicle Fees and Taxes* refers to revenues derived from increases in the motor vehicle registration fee, identification markers, and diesel fuel tax. The amount credited to the TTF shall not be less than \$30 million annually.

The TTF will provide a funding stream of \$700 million annually for transportation projects. Through the appropriation process, approximately \$130 million annually will be dedicated to county and municipal aid for transportation from the trust fund.

The TTF legislation also allows the local aid funds to be disbursed on either a grant or cost reimbursement basis; allows bond maturities of up to 20 years; permits multi-year funding agreements; and allows NJDOT to loan federal funds allocated to the state to public or private entities for transportation purposes for up to five years.

General Appropriations The State of New Jersey also provides operating assistance to public transit through annual budget appropriations. This operating assistance is discretionary and varies annually.

Other Funding Sources

Toll Authorities: The DVRPC region is served by a number of toll authorities whose revenues are used to maintain and operate their respective facilities. Listed below is a brief summary of these authorities.

The *Pennsylvania Turnpike Commission* operates the Pennsylvania Turnpike and Northeast Extension. These two facilities traverse 475 miles in Pennsylvania of which approximately 86 miles are in the DVRPC region. Total toll revenue for these facilities was nearly \$281 million in 1994.

The *New Jersey Turnpike Authority* operates the New Jersey Turnpike which is 131 miles long. Approximately 60 miles of the Turnpike traverse the DVRPC region. The Turnpike generated slightly under \$344 million in toll revenues in 1994.

The *Delaware River Port Authority (DRPA)* operates the Ben Franklin Bridge, Commodore Barry Bridge, Walt Whitman Bridge, Betsy Ross Bridge, and the PATCO High Speed Line. DRPA is also responsible for port development in the Philadelphia metropolitan area. Nearly 47 million vehicles crossed the DRPA bridges in 1993 and more than 11 million passengers rode the PATCO system. DRPA's total operating revenues were over \$120 million in 1994.

The *Burlington County Bridge Commission* owns, operates, and maintains two Delaware River toll bridges linking New Jersey and Pennsylvania, as well as seven

non-toll bridges throughout Burlington County. More than 76,000 vehicles cross the Burlington-Bristol and Tacony-Palmyra bridges every day. Revenue from the toll bridges goes toward the repair and maintenance of all bridges and approaches under the Commission's jurisdiction. Total toll revenue for the Commission was approximately \$16.4 million in FY 1994.

The *Delaware River Joint Toll Bridge Commission* operates and maintains 2 toll bridges and 7 non-toll bridges in the DVRPC region. The toll bridges connect Trenton to Morrisville via Route 1 and the New Hope area to the Lambertville area via Route 202. Revenue from the toll facilities in the DVRPC region totalled nearly \$4 million in 1994.

The *South Jersey Transportation Authority* operates the Atlantic City Expressway, the Atlantic City International Airport and the Atlantic County Transportation Parking garage in Atlantic City. Approximately 14 miles of the 44 mile Atlantic City Expressway are within the DVRPC region. Total revenues for the South Jersey Transportation Authority were nearly \$30 million and toll revenue from the Expressway was approximately \$24 million in 1994.

The *New Jersey Highway Authority* operates the Garden State Parkway which is 172 miles in length. Approximately 6 miles of the parkway traverse the DVRPC region. Toll revenue for the Garden State Parkway was approximately \$167 million in 1994.

State Aviation Funds: Many projects at non-federally funded (privately owned non-reliever airports) are advanced with state capital subsidies, generally at a 75% share. States' funding in general is increasing.

Local Government Sources: All municipal governments are responsible for maintaining the road system under their jurisdiction. Counties in New Jersey, and to a lesser extent in Pennsylvania, also are responsible for portions of the highway system. In addition, there are instances where governments at either level own transit vehicles or property. The source of the funds used for these purposes are generally derived from local taxes. Though these expenditures are significant, DVRPC has not accounted for them in this Plan. Similarly, the local share of aviation project costs must be borne by local bond issues in the case of PHL and other publicly owned airports or by private owners where possible.

Private Sources: In addition to toll facilities, both states in the DVRPC region have granted municipalities, and in some cases counties, the right to impose impact fees on new development or to create special assessment districts for transportation improvements. These funds can be used to leverage federal, state or local funds or to undertake improvements without any public funding.

In the coming years, the region will need to increase the amount of funds it receives from non-traditional sources to maintain and improve the transportation system. New financing mechanisms may include congestion pricing, parking pricing,

establishing highway toll districts, public/private partnerships, permitting advertising on variable message signs during off peak hours, and a variety of local option taxes. Innovative strategies to raise additional revenue for transportation improvements is the topic of the next section.

Available Resources—Potential New Sources of Funding

ISTEA has provided for a substantial increase in authorization levels for federal transportation funding. As described in the previous section, certain new funding programs are available to the region as well as additional flexibility in the use of federal funds. However, Congress has been unable to appropriate the expected amounts of funds due to pressure to reduce the nation's budget deficit. Transportation funding at the state level has not been increasing as hoped either. State gas taxes, which form the revenue base, are not keeping pace with inflation and the states are reluctant to raise them. In addition, with ever-increasing fuel efficiency, the growth rate of the gas tax revenue base is declining.

The uncertainties of future levels of traditional funding, coupled with increasing costs to maintain and operate the transportation system and an increasing demand for transportation in the region, make it clear that new funding mechanisms must be explored. In order to ensure that the recommendations of *Moving People and Goods* can be implemented, the region must focus its attention on identifying innovative ways to raise additional

revenue, particularly at the regional/county level.

The following table details potential new sources of funding. It is divided into four categories: (1) State Taxes and User

Charges, (2) Local Option Taxes and User Charges, (3) Benefit Sharing Strategies, and (4) Other Approaches. This compilation should be viewed as a menu of options available to the region, and not as a list of recommendations.

Potential New Sources of Funding

Technique	Geographic Area of Applicability	Implementation Responsibility	Examples Where this Technique has been Implemented
State Taxes or User Charges			
Additional State Fuel Taxes <i>cents per gallon increase charged at the pump</i>	Statewide	State government	California
Index State Fuel Taxes to Inflation <i>to prevent decrease in real dollars over time and provide a more predictable funding stream</i>	Statewide	State government	
Change Gallon Tax to a Sales Tax Base <i>assessed as a percentage of sales instead of on a per gallon basis, so tax revenue increases with the price of gas</i>	Statewide	State government	
State Constitutional Amendment to Allow Gasoline Tax Funds to Be Spent on Any Transportation Mode <i>including mass transit, bicycle, and pedestrian projects</i>	Statewide	State government	Kansas, Maine, Montana, Nebraska, New York, Ohio, and Rhode Island allow gas tax proceeds to be spent on highways or transit
Tax on Motor Vehicle Insurance <i>assessed as a percentage of the premium</i>	Statewide	State government	
Additional Auto Registration Fees <i>increase in the dollar amount per vehicle assessed annually at the time of vehicle registration</i>	Statewide	State government	
Additional Truck Fees <i>truck tax based on weight or on a weight & distance traveled combination in lieu of fuel taxes and progressively costly licenses</i>	Statewide	State government	

Technique	Geographic Area of Applicability	Implementation Responsibility	Examples Where this Technique has been Implemented
Local Option Taxes and User Charges			
Local Vehicle Registration Fees/Vehicle License Fees/Driver License Fees <i>dollar amount per vehicle assessed annually at the time of vehicle registration, or a fee assessed at the time of driver's license renewal</i>	Limited to municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	Counties in Texas and in the Seattle, Washington area, additional locations
Transit Fare Restructuring <i>fare increases; adjustments to the transit system's rate structure, collection, or marketing techniques</i>	Operating area of the transit agency	Transit agency	Nationwide
Regional/County Gas Tax <i>tax charged at the pump on a cents per gallon basis or as a percentage of sales</i>	Limited to counties or regions within a state	County or regional government with state enabling legislation	Local jurisdictions in California, Florida, Illinois, Virginia, and Washington
Regional Tax on Vehicle Miles Traveled <i>cents per vehicle mile traveled - mileage determined at the time of vehicle inspection</i>	Limited to regions within a state which has a periodic inspection program	Regional government with state enabling legislation	
Parking Taxes <i>on gross proceeds or on a per stall basis for commercial parking operators, or as a percentage of the parking fee or a flat fee for individual parkers</i>	Limited to portions of a municipality, or whole municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	Local jurisdiction in the Seattle, Washington area
Congestion Pricing/Tolls <i>increase tolls during peak hours or for solo drivers</i>	Limited to designated facilities	Toll authorities	
Regional Add-On to Sales Tax <i>percentage of taxable sales added on to the existing state sales tax</i>	Limited to municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	Philadelphia, PA; Maricopa County, AZ; San Diego County, CA and 5 counties in the San Francisco area; Atlanta, GA; Seattle, WA; and Cook County, IL
Add-On Sales Tax for Motor Vehicles <i>percentage of motor vehicle sales added on to the existing state sales tax</i>	Limited to municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	
Regional Personal Dedicated Income Tax <i>percentage of taxable income</i>	Limited to municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	

Technique	Geographic Area of Applicability	Implementation Responsibility	Examples Where this Technique has been Implemented
Add-On Corporate Dedicated Income Tax <i>percentage of taxable income added on to the existing corporate income tax</i>	Limited to municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	
Additional Taxes on Cigarettes/Liquor <i>existing tax rate increase</i>	Limited to municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	
Tax on Advertisements for Automobiles/Gasoline/Automobile-Related Products and Roadside Billboards <i>tax proceeds to be spent on ameliorating the negative by-products of driving</i>	Limited to municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	
Add-On Utility Tax <i>increase the existing rate of consumption tax</i>	Limited to municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	New York City
Add-On Property Tax <i>dollar amount per \$1000 of assessed value added on to the existing property tax</i>	Limited to municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	Minneapolis/St. Paul, Minnesota; Portland, Oregon; and Washington
Local Real Estate Excise Tax <i>percentage of the sale of real property assessed at the time of sale</i>	Limited to municipalities, counties, or regions within a state	Municipal, county, or regional government with state enabling legislation	Washington
Benefit Sharing Strategies			
Sale or Lease of Government Property/Development Rights <i>generate revenue through the sale or lease of property, including the air and subsurface property rights (joint development)</i>	Site specific	Transportation agency	SEPTA, Washington Metropolitan Transportation Authority, state transportation agencies in California, Massachusetts, and Nevada
Special Transportation Assessment Districts <i>charge assessed on commercial and/or residential property in designated areas; amount assessed based on funding formulas that determine the "fair share" given the projected use of the services or facilities by each property</i>	Designated district	Municipal, county, or regional government with state enabling legislation	East Whiteland, Tredyffrin, and Upper Dublin Townships in Pennsylvania; Chicago, Illinois; and Seattle, Washington

Technique	Geographic Area of Applicability	Implementation Responsibility	Examples Where this Technique has been Implemented
Developer Impact Fees <i>single payments required of developers as a condition of development approval, to be used by localities to pay the development's proportionate share of the cost of off-site public services or facilities necessitated by the new development; calculated based on the proportionate cost to mitigate the identified impacts and collected into a separate account</i>	Limited to municipalities within a state	Local government with state enabling legislation	local jurisdictions in New Jersey and Pennsylvania; nationwide
Tax Increment Financing/Value Capture <i>increases in property tax revenue derived from public and private investments located near a project - the amount collected over the base-year value is used to finance public improvements</i>	Limited to municipalities within a state	Local government	Nationwide
Density Bonus Arrangements <i>developer contributes to a transit related improvement in return for additional development rights</i>	Limited to municipalities within a state	Local government	New York City
Other Approaches			
Legislative Earmarks <i>language and funding for a specific project inserted into transportation authorization or appropriation bills at the federal or state level</i>	Project specific	Federal or state legislature	Nationwide
Transfer Ownership of State-Owned Roads to Counties or Municipalities (or vice versa) along with Sufficient Gas Tax Funds to Maintain Them <i>to reduce maintenance burden</i>	Roadway specific	Municipal, county, and state government	Nationwide
Increasing Efficiency/Reducing Costs <i>reduce costs of providing existing services by making existing system more efficient, i.e., competitively bidding highway maintenance and transit service, private development of facilities, and travel demand management</i>	Municipality, county, region, or operating area of transportation agency	Municipal, county, or state government, or transportation agency	Nationwide

Determination of Needs

In order to determine the adequacy of traditional resources to construct the facilities and implement the services recommended in *Moving People and*

Goods, it is necessary to determine the approximate cost of these recommendations. Capital costs of facility recommendations were estimated for individual projects in the plan. Capital costs reflect the implementation of the

facility recommendations of the plan detailed in Chapter 7 and Appendix B. Major maintenance costs and additional capital costs associated with other work not detailed in *Moving People and Goods*, were based on historic precedent using equivalent costs from the current Transportation Improvement Program (TIP). Projected federal operating assistance to the region's transit operators was incorporated with this "grouped" cost.

Individual and grouped projects were first categorized by the nature of the principal benefits they are intended to provide. This was necessary in order to then assess the impact of the policy recommendations on anticipated spending levels for various types of projects. This was done through the application of adjustment factors to the initial costs of the "grouped" projects in each category. The following categories were developed: freight movement initiatives, isolated safety & environmental improvements, network reconstruction & maintenance, passenger intermodal facilities, public transit & ridesharing, roadway improvements, traffic operational improvements, transportation enhancements/amenities, travel demand management.

Freight Movement Initiatives - It should be emphasized that many roadway improvements that benefit freight travel are included in other highway-related categories. This category accommodates or facilitates the specific needs of freight movement within the region. Roadway improvements in this category address special truck operating characteristics beyond the requirements of automobile use. Potential rail network improvements

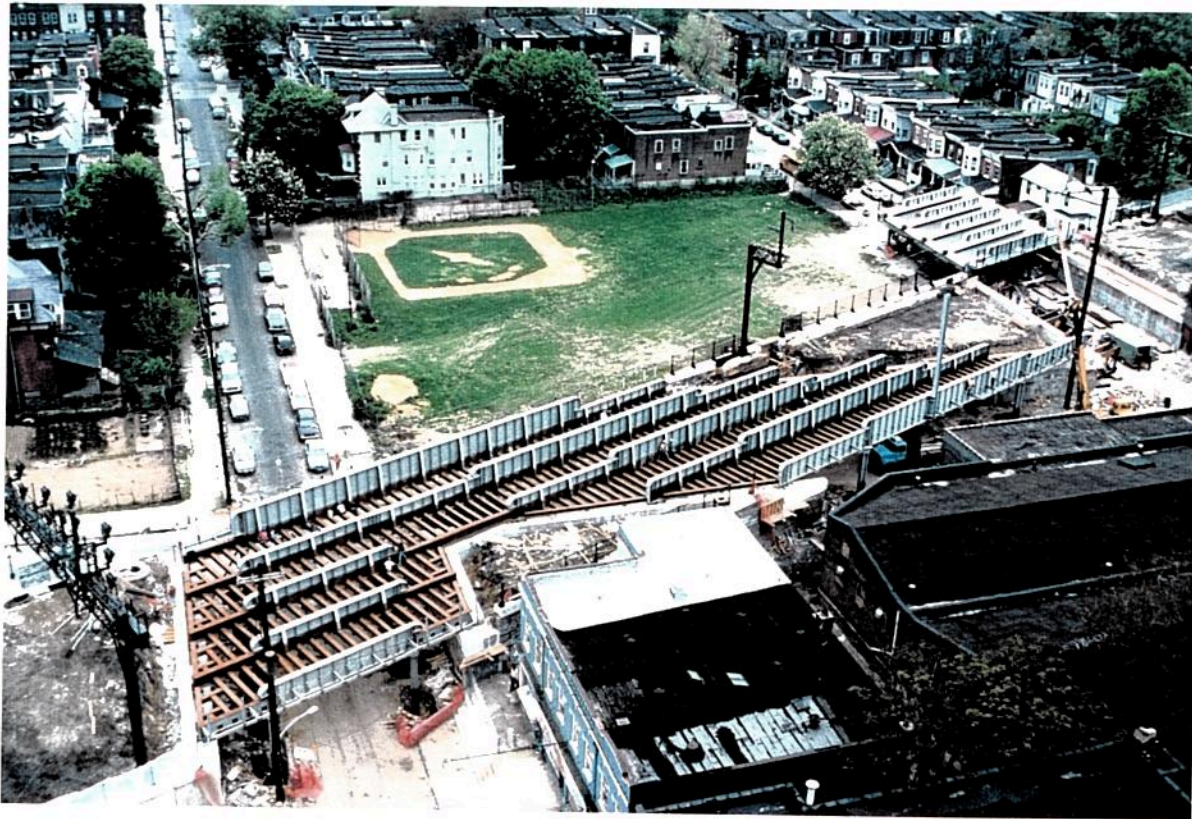
address freight train characteristics beyond the requirements of passenger rail service where shared use tracks are involved. Other improvements enable the increased movement of goods within and between transportation modes. Other improvements to benefit freight movement, while important, are not considered regionally significant and are not explicitly cited below. Some of these types of improvements include freight route signs, improved truck turning radii, and freight route mapping.

Isolated Safety & Environmental

Improvements - Enhancing safety is an element of all improvement categories. This category encompasses improvements which target specific safety deficiencies. Any improvements which promote public safety and the general welfare, such as wetlands restoration and ground water clean-up, are included in this category. These improvements do not result in significant alterations in the transportation network, although some minor changes and operating efficiencies may result. Some of these activities include: installation of warning lights and signs, elimination of hazardous conditions, grooving, grading and superelevation, street light improvements, installation of median barriers, curbing, guide rail improvements, public transit signal system improvements, curve improvements, sight distance improvements, rumble strip installation, creation of wetlands, noise barriers and walls, monitoring and regulatory facilities.

Network Reconstruction & Maintenance -

This category consists of improvements which maintain the existing transportation



SEPTA Railworks Reconstruction Project

network. These improvements do not substantially alter the network characteristics (e.g., providing additional highway travel lanes). However, improved operating characteristics may result in increased operating efficiency. Capacity of facilities is not significantly increased by these improvements. Operating assistance to public transit providers is also included in this category. Some of these activities include: highway resurfacing, highway restoration/rehabilitation, bridge rehabilitation/replacement, drainage and culvert work, fleet conversion, public transit maintenance facilities, public transit track and overhead wire improvements, project related wetland replacement, public transit

substation improvements, public transit operating facilities, public transit operating assistance, public transit infrastructure improvements, monitoring and regulatory facilities and elderly and handicapped facilities and equipment.

Passenger Intermodal Facilities - This category type entails improvements that promote intermodal travel (i.e., joint highway and public transit trips). Intermodal improvements afford enhanced opportunities for people to satisfactorily complete trips which combine travel modes. This may result in the reduction of single occupant auto travel demand. Some of these activities include: park and

ride lots, transit station access, bus shelters and transportation centers.

Public Transit & Ridesharing

Improvements - Improvements in this category provide additional transit and/or shared-ride facility capacity. Transit improvements in this category are perceptible to riders and, therefore, may spur increased transit usage. Changes in travel patterns may be evidenced in the elimination or shortening of single occupant auto trips. Some of these activities include: high occupancy vehicle lanes, shuttle services, dial-a-ride services, car and vanpool services and facilities, exclusive transit way improvements, automatic ticket dispensers, new transit stations, transit station expansion, transit vehicle improvements, new and reactivated transit services, transit passenger communications and paratransit service improvements.

Roadway Improvements - This improvement type results in a substantial increase in the capacity of a roadway to convey vehicular traffic. Improvements are large in scope (i.e., greater than one mile of new controlled access facility) and cost and require significant construction. These improvements include major widening, major relocation, major traffic circle improvements/eliminations, major intersection improvements, new roadway, new interchanges, major ramp improvements and grade separation.

Traffic Operational Improvements - This category includes improvements which result in minor modifications of the existing road network. The improvements are designed to derive the maximum

operating capacity from existing highway facilities. Improvements may range from minor construction projects to those which incorporate state-of-the-art technologies. Traffic flow improvements are restricted to spot locations or along minor stretches of corridors. In general, these projects do not exceed the equivalent of one mile of new controlled access facility.

Among the activities included are: directional signs, minor intersection improvements, signal progression/coordination, minor realignment, minor reconstruction, channelization, traffic circulation improvements, increase of turning radii, motorist information systems, jughandles, ramp metering, incident management, intelligent vehicle highway systems, minor widening, minor ramp improvements, bus turnout bays, intersection turn lanes, minor traffic circle improvements/eliminations, improved traffic control devices and signal installation and modernization.

Transportation Enhancements/Amenities - Improvements which enhance the environs of the transportation network are grouped in this category. These improvements afford desirable products such as recreation facilities and visual enhancements and mitigate non-desired side-effects of transportation systems such as noise pollution. All bicycle and pedestrian facilities are also included in this category. Enhancements and other amenities do not necessarily have demonstrable impacts on traffic flow or transit operations. However, these improvements sensitize people to environmental and societal concerns and possess a kinetic value for encouraging

desirable travel patterns. Some of these activities include: rest areas, landscaping, pedestrian bridges and walkways, bicycle paths, visitor and rest centers, cultural and sightseeing transit services, acquisition of scenic easements and scenic or historic sites, scenic or historic highway programs, historic preservation, preservation of abandoned railway corridors, control and removal of outdoor advertising, archaeological planning and research and mitigation of water pollution due to highway run-off.

Travel Demand Management -

Improvements in this category serve to better coordinate the demand for transportation with the availability of transportation facilities (giving preference to the accommodation of travel demand through public transportation and shared ride mechanisms). These types of improvements are intended to provide more efficient use of transportation systems and decreased congestion through alterations in the demand for various facilities without altering the facilities themselves. Some of these activities include: transportation management associations, special service districts, congestion pricing programs, public/private partnerships and entrepreneurial ventures.

DVRPC has estimated the cost of the non-aviation related facilities and services recommended in *Moving People and Goods* to be approximately \$21.0 billion. The draft *Year 2020 Regional Airport System Plan* includes an additional \$0.7 billion in aviation system needs of which slightly less than \$0.6 billion occurs at Philadelphia International Airport.

The estimated cost for the recommended plan does not include routine maintenance or operating expenses (beyond that covered by federal operating subsidies for the transit system). These cost categories are extremely difficult to project over the time horizon of the plan, and, in fact have proved quite difficult to assess for even the current period.

Transit operating expenses, as reported in the financial statements of each of the operators, include all costs associated with providing the service and maintaining the system, including all labor, materials, utility costs, rents, and outside contracts. These expenses must be covered by farebox revenue, property leases, advertising revenue, and other income. What can not be met by these revenue sources must be covered by public subsidies, either local, state or federal. Seeking these subsidies focuses public attention on the transit operator.

Contrary to general public opinion, transit operating expenses, when adjusted for inflation, have been relatively constant. According to data taken from operating statements over the past 10 years, NJ TRANSIT's operating expenses have increased at an average adjusted rate of 1.1 percent per year systemwide, PATCO's at 0.7 percent, and SEPTA's has actually been declining at about 0.4 percent per year. Past trends, however, have limited utility in predicting future conditions. There are innumerable considerations which affect these trends including: labor contracts, regulatory requirements, operating characteristics, etc.

Highway operating expenses are covered by numerous parties and are only partially reported in governmental documents. The state DOTs and toll authorities annually report their expenses, though these expenses are generally not assignable to specific metropolitan regions nor are they necessarily limited to only the surface transportation operations of the agency.

In addition to these parties, the more than 360 local and county governments of the region expend in total a larger sum than the states on operating and maintaining the highway system. Their budgets and annual reports may or may not identify capital expenditures for their highways and roads, but seldom is there a separate accounting for the operating expenses related to their highway system. These costs include: street cleaning, snow plowing, grass cutting, street lighting, sign and signal maintenance, patching and resurfacing, traffic management and enforcement including traffic courts, etc. These expenses are usually covered by property, sales and other general taxes, representing a public subsidy of the highway system. Because of the large number of public bodies involved and the unrelated nature of the taxes, little attention is focused on this subsidy.

Adequacy of Traditional Sources

DVRPC has estimated that roughly \$21 billion is anticipated to be available for transportation improvements for the region from traditional sources between 1996 and 2020. This estimate assumes periodic reauthorization of the federal surface

transportation act at levels commensurate with those in the ISTEA of 1991, when adjusted for inflation. To maintain the current level of funding into the future, the plan makes the further assumption that there will be the necessary increases in the factors that support these funding programs (taxes, fees, general fund revenues, etc.). It further assumes that the state and local agencies providing matching funds for these federal programs will continue to meet those obligations. It also assumes that current levels of state funding for non-federal projects will be maintained.

Traditional sources will be able to cover the full cost of the needs identified in *Moving People and Goods*. Thus we can say that the plan is constrained to reasonably anticipated financial resources. However, the point needs to be emphasized here that the plan does not identify let alone provide for all of the region's needed improvements. As an illustration of this point, the financial constraint does not take into consideration the potential costs of projects which may evolve from the recommended studies list. The reader is referred to Postscript section of this document for further discussion in this regard.

Is this the direction that the Delaware Valley should take? *Moving People and Goods* recommends consideration of each of the alternative funding mechanisms identified above to find an equitable means to generate sufficient revenue to address the identified shortfall. □

Estimate of Costs for Projects in the Year 2020 Plan by Category (\$ millions)

Plan Category	Grouped Project Cost*	Individual Project Cost*	TOTAL Cost*
Freight Movement Initiatives	\$61.2	\$129.5	\$190.7
Isolated Safety and Environmental Improvements	\$562.4	\$149.5	\$711.9
Network Reconstruction and Maintenance	\$7,665.8	\$1,280.2	\$8,946.0
Passenger Intermodal Facilities	\$47.4	\$217.2	\$264.6
Public Transit and Ridesharing	\$1,992.1	\$3,703.7	\$5,695.8
Roadway Improvements	\$300.3	\$2,377.1	\$2,677.4
Traffic Operational Improvements	\$1,464.1	\$599.6	\$2,063.7
Transportation Enhancements/Amenities	\$147.2	\$0.0	\$147.2
Travel Demand Management	\$332.7	\$0.0	\$332.7
TOTAL	\$12,573.2	\$8,456.8	\$21,030.0

* Individual Project Costs reflect assumed costs to complete plan projects (found on pp. 83-85). They also include assumed costs for the examples of potential systemwide improvements found in Appendix B. The Grouped Project Costs were obtained as extrapolations of the costs of other types of projects (work typical of projects found in the DVRPC TIP).

** Please note: plan costs do not reflect the region's total transportation needs during the period of the plan. A variety of factors, including rising construction costs, the refinement of project scopes and the eventual construction of projects associated with major studies in the plan, will significantly add to these costs.

Assumed Traditional Sources Available Per Year By Program (Millions)

<u>Transit</u>		<u>Highway</u>	
Section 3A	\$99.33	Interstate Maintenance	\$34.50
Section 3B	\$29.00	Bridge	\$70.50
Section 3C	\$14.50	NHS & Interstate	\$122.33
Section 9	\$93.83	STP	\$73.67
Section 16(B)2	\$3.17	CMAQ	\$46.50
Section 18	\$0.33		
FTA Subtotal	\$240.16	FHWA Subtotal	\$347.50
State Transit	\$146.67	State Highway	\$58.34
Local Transit	\$18.33	Toll/Private	\$44.33
Non-FTA Subtotal	\$165.00	Non-FHWA Subtotal	\$102.67
Transit Total	\$405.16	Highway Total	\$450.17
TOTAL ANNUAL		\$855.33	
GRAND TOTAL		\$21,030.00	

IX CONFORMITY WITH AIR QUALITY GOALS

BACKGROUND

Moving People and Goods was prepared with federal requirements for air quality goals in mind. Conformity is required by the Clean Air Act Amendments of 1990 and is intended to assure that transportation investment is consistent with air quality objectives as stated in the state implementation plans of Pennsylvania and New Jersey. These state plans identify emission reduction targets for highway sources as well as other mobile sources (such as aviation), point sources (such as factories) and area sources (such as lawn mowers).

This section describes the process used for the demonstration of the conformity of *Moving People and Goods*. Four aspects of the analysis are discussed: **projects tested** in the regional emissions analysis, **vehicle characteristics** to determine emissions rates, **future travel data** used to characterize highway use and **resulting emission levels** cited to determine conformity.

Mobile source pollutants addressed include volatile organic compounds (VOCs) and oxides of nitrogen (NO_x), which produce ground level ozone, as well as carbon monoxide (CO). Consistent with the conformity rule, the analysis years for *Moving People and Goods* for ozone precursors (VOCs and NO_x) and carbon monoxide (CO) are: 1990 (to establish a baseline), 1996 (as the first major

milestone year and the only one for which VOC emissions *budgets* have been established), 2005 (because it is the year by which the region must attain the ozone standard), 2015 (because it is ten years beyond the attainment year) and 2020 (because it is the horizon year of the 2020 Plan). Ozone precursors are estimated for July of each year and CO for January. The baseline (i.e., no-build) and action (i.e., build) networks are different for each of the future analysis years. The following table indicates the kinds of projects and activities which are considered in each future year and scenario.

PROJECTS TESTED

According to the final conformity rule, the emissions analysis must model all *regionally significant projects* which are not *exempt*. Non-exempt highway and transit projects are those on facilities which serve regional needs and are included in the regional model, including at a minimum all principal arterials and fixed guideway transit facilities. Categories of exempt projects include: projects to enhance safety or esthetics, maintain mass transit, continue current levels of ridesharing, or build bicycle and pedestrian facilities. In *Moving People and Goods*, all projects are either considered exempt or regionally significant under the above definition. Regionally significant projects have been further categorized as either "baseline" or "action" depending on their projected completion. Any project which was found in the first three years of the previous conforming TIP

(FY 1995) was considered part of the baseline scenario. All other projects from the TIP and all projects found only in *Moving People and Goods* are included in the action scenario.

The projects in both the baseline and action scenarios are separated into three

groups according to the date they are scheduled for completion:

- before November 15, 1996;
- before November 15, 2005; or
- before November 15, 2015.

Projects that are presumed completed prior

Projects and activities included in the regional emissions analysis

<u>Year</u>	<u>Baseline scenario</u>	<u>Action scenario</u>
1990 <u>(Base Year)</u>	① All in-place regionally significant highway and transit facilities, services and activities in 1990	
1996 <u>(Milestone Year)</u>	①+ ② All current additional in-place regionally significant highway and transit facilities, services and activities + All on-going TDM and TSM activities including the Employer Trip Reduction Program + Projects which are (1) under construction, (2) ROW is being acquired, or (3) have completed the NEPA process, and which will be open by 1996 + Projects which were in the first three years of the FY 1995 TIP, and which will be open by 1996	①+②+ ③ Other regionally significant projects, including any TCMs, in the Plan open by 1996 + Non-federal regionally significant projects open by 1996
2005 <u>(Attainment Year)</u>	①+②+ ④ Additional projects from the last two categories of ② above which will be open after 1996 and by 2005	①+②+③+④+ ⑤ Other regionally significant projects as in ③ above open after 1996 and by 2005
2015 <u>(Interim Year)</u>	①+②+④+ ⑤ Additional projects from the last two categories of ④ above which will be open after 2005 and by 2015	①+②+③+④+⑤+⑥+ ⑦ Other regionally significant projects as in ⑤ above open after 2005 and by 2015
2020 <u>(Horizon Year)</u>	①+②+④+⑥+ ⑧ Additional projects from the last two categories of ⑥ above which will be open after 2015 and by 2020	①+②+③+④+⑤+⑥+⑦+⑧+ ⑨ Other regionally significant projects as in ⑧ above open after 2015 and by 2020

to one of the above completion dates *do not* become part of the baseline alternative for later years. For simplicity, it is assumed that all projects in *Moving People and Goods* will be completed by 2015. Therefore the 2020 project set is identical to the 2015 set.

Finally, projects must be analyzed either within the regional travel demand model or through some *off-model* technique, such as the CMAQ project evaluation procedures developed by COMSIS Corporation for Pennsylvania. This distinction is made to appropriately treat the effects of implementing projects which can not be effectively addressed within the travel demand model's capabilities.

VEHICLE CHARACTERISTICS

EPA requires the use of the MOBILE computer model to calculate composite emission rates which reflect the types of vehicles in use in the Delaware Valley region. Inputs into the MOBILE5a model, the latest version, specify the applicable inspection and maintenance programs, the available fuels, and the composition of the fleet of vehicles using area roads. These settings for the TIP and plan conformity demonstrations-

- have been agreed to by DVRPC, state transportation and air agencies, FHWA, FTA and EPA;



NJT Princeton Junction Station

- use the same set of ambient temperatures used to establish state emission budgets;
- may differ in other respects from settings used to establish state emission budgets;
- use default vehicle operating characteristics (percent cold start trips, for example), and
- use vehicle-miles of travel by vehicle type as developed by DVRPC.

A table in an appendix to the conformity report indicates the inputs for the base year 1990, milestone year 1996 and attainment year 2005. Settings for 2015 and 2020 will be the same as 2005 except for the calendar year.

FUTURE TRAVEL DATA

Travel data is generated by the DVRPC regional travel demand model. Simulations are performed for each analysis year, for both the baseline and action scenarios. No changes to transit operating policies are assumed over the life of the plan and fares are anticipated to remain constant in comparison to the costs of driving.

Making use of the information from the travel simulation model in the conformity analysis requires subsequent manipulation of the output travel data. The simulation provides traffic volumes and vehicle-miles of travel (VMT) for each segment of road considered in the model. VMT on each link is divided into 24 one-hour periods based upon fractions developed by DVRPC. Roadway speeds are estimated through the use of curves relating

anticipated traffic volume to roadway capacity. Additional vehicle travel on non-network (local) roads is included and is distributed to subareas in proportion to the amounts of arterial and local network travel experienced.

RESULTING EMISSION LEVELS

Consistent with the requirements for nonattainment areas in the transitional period of federal guidelines, the Delaware Valley Regional Planning Commission is responsible for determining that *Moving People and Goods* conforms to the state implementation plans of Pennsylvania and New Jersey. Specifically, the conformity determination must-

- be based on the latest planning assumptions;
- employ the latest emissions estimation model available (MOBILE5a);
- include applicable consultation procedures consistent with those described in the final rule and applicable SIP revisions;
- analyze a plan which does not interfere with the timely implementation of any transportation control measure (TCM); and
- assume that TCMs in the state implementation plans will be successfully implemented.

In addition, the regional emissions analysis meets all tests in the final rule, including the following:

Selected Statistics from Regional Travel Simulations (thousands)

Simulation Scenario		Person Trips	Transit Trips	Auto Driver Trips	Vehicle Trips	Vehicle Miles of Travel	Avg Speed (mph)
1990	Base	16,446	859	10,971	14,052	99,008	26.2
1996	Baseline	17,342	851	11,586	14,906	106,263	26.4
1996	Action	17,342	851	11,586	14,906	106,263	26.4
2005	Baseline	18,448	843	12,362	16,006	118,067	26.2
2005	Action	18,448	847	12,539	16,003	117,811	26.3
2015	Baseline	19,610	842	13,167	17,084	127,950	25.8
2015	Action	19,610	872	13,149	17,065	127,293	26.1
2020	Baseline	20,085	835	13,504	17,539	131,914	25.6
2020	Action	20,085	876	13,479	17,513	131,304	25.9

- VOC, NO_x and CO emissions for the action scenario in each of the analysis years are less than the emissions in the base year (1990);
- VOC, NO_x and CO emissions for the action scenario in each of the analysis years are less than the baseline emissions in the same analysis year; and
- VOC emissions for the action scenario are less than the budgets for VOCs established by the states for 1996.

The following tables show the emissions of VOCs, NO_x and CO for the base year and the analysis years. Each entry consists of the output of the simulation from which is subtracted emissions reductions from off-

model calculations. Also subtracted, in the case of the action scenarios, are reductions from adopted employer trip reduction programs and other transportation control measures in the amounts claimed for them in the state implementation plans. The CO results are for CO nonattainment areas only—Philadelphia and Camden counties. The projects recommended in *Moving People and Goods* result in very little overall effect on emissions of highway vehicles in the region. However, to the extent that the projects do affect emissions, they represent a balance between improved transportation infrastructure and improved air quality. □

Emissions of Volatile Organic Compounds (Kg/July day)

Simulation Scenario		PA	NJ	Region
1990	Base	181,890	86,410	268,300
1996	Budget	99,673	47,273	146,946
1996	Baseline	90,582	47,264	137,846
1996	Action	90,439	47,274	137,713
2005	Baseline	52,693	28,017	80,710
2005	Action	52,088	27,905	79,993
2015	Baseline	51,921	27,410	79,331
2015	Action	50,898	27,167	78,065
2020	Baseline	53,021	28,144	81,165
2020	Action	52,165	28,058	80,223

Emissions of Oxides of Nitrogen (Kg/July day)

Simulation Scenario		PA	NJ	Region
1990	Base	156,523	89,630	246,153
1996	Baseline	121,506	72,834	194,340
1996	Action	121,189	72,870	194,059
2005	Baseline	98,965	55,978	154,943
2005	Action	98,659	56,045	154,704
2015	Baseline	103,246	57,451	160,697
2015	Action	102,805	57,318	160,123
2020	Baseline	105,777	58,948	164,725
2020	Action	105,647	59,037	164,684

Emissions of Carbon Monoxide (Kg/January day)

Simulation Scenario		Philadelphia	Camden	Total
1990	Base	324,194	228,311	552,505
1996	Baseline	244,367	134,013	378,380
1996	Action	244,192	134,130	378,322
2005	Baseline	184,811	96,818	281,629
2005	Action	184,117	96,424	280,541
2015	Baseline	174,477	102,263	276,740
2015	Action	172,597	101,097	273,694
2020	Baseline	176,382	106,234	282,616
2020	Action	174,813	105,035	279,848

POSTSCRIPT

USES OF THE PLAN

The plan's primary use is in providing a foundation and context for state and local governments, authorities, and others in the Delaware Valley to conduct long range planning. Many actors in the region make decisions that impact transportation. The plan considers all future travel and transport needs at the metropolitan level and then combines and condenses infrastructure and programmatic improvements into what may be regarded as the region's key transportation reference document.

Incorporation of the plan's goals and recommendations into other plans and capital programs provides an opportunity for reinforcement and support of the plan. Both New Jersey and Pennsylvania are in the process of developing statewide transportation plans, which are also guided by ISTEA. Other transportation plans also exist — ports, airports, public transit, and the private sector — which can advance the objectives of the plan. All of the counties in the DVRPC region have prepared or are currently preparing updates of their master plans. Perhaps of greater importance, the region's municipalities follow comprehensive plans in reaching many land use and transportation decisions.

Guiding Regional Growth has defined a hierarchy of land use categories and centers for the region with objectives for managing future growth. One method to

help influence those development objectives is to use infrastructure investments, particularly transportation improvements, as a tool to help foster, support, or even limit future growth. By first identifying a preferred land use pattern, then targeting transportation improvements, DVRPC can begin to better influence future growth patterns. Different types of transportation improvements will be applied in the different land use categories of the land use plan. The specific project recommendations of *Moving People and Goods* are reviewed against the land use map and the Transportation Improvement Matrix (see p. 58) to assure planning consistency and help to facilitate implementation of the land use goals.

One other vital use of the plan is as a guiding force in revising the regional Transportation Improvement Program (TIP). The TIP — the region's short-range transportation improvement programming document, updated annually — contains projects that are slated to receive federal and other funds for engineering, right-of-way acquisition and construction or analogous activities. It is critical that each TIP be developed to carry out the region's long range plan.

The plan also provides the region with the ability to evaluate the progress of transportation initiatives. Plan evaluation should include examinations of the region's adherence to policies, advancement of projects and programs, and completion of technical studies.

Recognizing these important roles, the plan does possess the qualities of interactiveness and flexibility. Since the development character of the region is constantly changing, the use of the transportation network will be changing as well. As a result, it is intended that the plan will be revisited on a regular basis to reevaluate its appropriateness.

ALTERATIONS TO THE PLAN

During the life of the plan, it is anticipated that implementing agencies will occasionally need to make changes to the plan. Federal regulations which implement provisions of ISTEA concerning the amendment and otherwise modification of TIPs do not set forth similar requirements for the modification of regional transportation plans.

Plans in air quality non-attainment areas, such as DIRECTION 2020, are required to be updated every three years to "confirm its validity and its consistency with current and forecasted transportation and land use conditions and trends and to extend the forecast period"¹. Additionally, all projects in a metropolitan area's TIP must be consistent with the transportation plan. Consequently, amendments and modifications of the DVRPC TIP which are inconsistent with DIRECTION 2020 must be reconciled through alteration of the TIP, the plan or both. Where plans have been revised in such a way as to

affect their determination of conformity with air quality guidelines, the MPO, FHWA and FTA are required to make new conformity determinations. Lastly, the regulations prescribe a minimum of one public review and comment meeting per year to review the planning assumptions and plan development process used to prepare the transportation plan.

Without clear federal guidance regarding the need for amendments or other alterations of metropolitan transportation plans, these requirements have been left to individual MPOs to develop. In the case of the DIRECTION 2020 initiative, three documents are subject to such considerations. These are *Guiding Regional Growth*, *Moving People and Goods* and *The Policy Agenda*. The nature of particular alterations will dictate the documents to be affected. The following guidelines for the DIRECTION 2020 initiative are intended to provide a uniform approach for the treatment of alterations to the plan consistent with federal requirements and the methodology employed for the DVRPC TIP:

Triennial Update: The plan is scheduled to be updated every three years to reflect alterations to transportation facilities, operating conditions, demographic characteristics, planning objectives and other relevant factors. The horizon of the plan may be extended by an update. However, it is also prudent that the entire planning effort should be undertaken regularly to reflect more fundamental changes to planning assumptions and methodologies. The creation of a new

¹Title 23 CFR §450.322 (a)

plan is therefore envisioned to coincide with the availability of new census transportation planning data for the region. The MPO Public Involvement Process must be applied to any triennial update.

Plan Amendments: A plan amendment is the addition or deletion of any major project, goal, policy or program. Major projects consist of regionally significant projects that are not identified as Systemwide Improvements. They are explicitly mentioned in the body of the *Moving People and Goods* document (i.e., excluding projects only mentioned in the Appendices).

If the amendment adds or deletes a project that contributes to or reduces transportation related pollutants, a new conformity determination is required by the MPO, FHWA and FTA. DVRPC refers to this type of action as a Major Amendment. Otherwise, no new conformity determination is required (Minor Amendment). DVRPC staff will determine whether a project is exempt from the conformity requirements. If it is not exempt, the air quality impacts will be calculated using the regional conformity model. Staff will consult with the appropriate agencies, as necessary, in making this determination.

The MPO Public Involvement Process must be applied to any plan amendment, unless the amendment includes only minor projects that may be grouped by function, area, or plan category as permitted by the CAAA and ISTEA.

Plan Modifications: Since other changes may need to occur within the plan that do not materially affect its major recommendations, an additional mechanism to affect these changes is provided. These types of changes are referred to as "Plan Modifications".

Modifications may include informational changes to narratives within the bodies of the documents. They also may reflect the addition or deletion of actions from *The Policy Agenda* and recommended studies from all documents.

Regarding transportation facilities, movement of major projects between short term and long term planning periods is considered a plan modification. Also, alterations to the sample list of regionally significant projects furnished as an appendix to *Moving People and Goods* are also considered plan modifications.

DVRPC brings the first two categories of changes to these three DIRECTION 2020 elements before the Board for action. They will be presented as "Triennial Updates" or "Plan Amendments". Once approved, plan amendments can then be reflected in either subsequent reprinting of the plan or supplemental documentation as needed.

Because plan modifications are strictly informational in nature, they are conducted at the staff level. Plan modifications are then incorporated in the next triennial update or reprinting of the plan. If reprintings of the final plan are made, they must be referenced by date.

2020 AND BEYOND — THE PATH AHEAD

Through the development of DIRECTION 2020, DVRPC has intended to establish a unified vision, subject to refinement, which deals with regional land use and transportation issues including traffic congestion, air quality, mobility and freight movement. The focus of the DIRECTION 2020 transportation plan, *Moving People and Goods*, is a series of multi-modal transportation corridors and centers which form the spokes and hubs of the metropolitan transportation network. The principal objective of this approach is to improve travel conditions within these centers and corridors in a coordinated fashion using appropriate forms of transportation. In this way, the region can solve transportation problems more cost effectively and the vitality of the communities using these facilities and services would be supported. The next step is to introduce this vision into the course of future planning work of all levels of government and other transportation stakeholders. The groups, in turn, will embrace some aspects of the plan and seek to modify others, ultimately leading toward a nexus of visions over time.

The Vision Becomes Clearer

What will the region look like in the year 2020? By laying out a series of goals that are both harmonious and achievable, we are able to get a better understanding of the region we hope to obtain. The plan points toward a singular vision of improved regional travel some of the

elements of which are described below:

The Delaware Valley is an exciting place to be in the year 2020. The engine of continued economic growth runs relatively unimpeded by former inadequacies in the transportation network. Infill development and redevelopment take place at an unprecedented rate while the business of farming continues largely uninterrupted. The region offers an unparalleled variety of appealing residential settings as older neighborhoods become infused with new life. Newer subdivisions, once islands in a sea of inaccessible development, coalesce into logical communities around strategically developed, pedestrian oriented centers. These centers offer various degrees of employment opportunities, commercial services, community use areas and access to public transportation. Strategically developed bicycle trails and walkways connect neighborhoods and community centers while a regional network of bicycle routes, lanes and paths provide for longer distance travel between major destinations.

Delaware Valley governments, partnering with other levels of government and the private sector, have committed to fully fund needed transportation improvements through a variety of means. The infusion of new funding for maintenance, bridge, and safety programs resulted in major initiatives to improve travel conditions. Construction crews seem to be constantly at work throughout the region not just repairing but improving pavements,

bridges, drainage and other features. Local governments continue to be proactively involved the planning of improvements in each center and corridor and provide a groundswell of support for projects to move forward. Major studies identified in *Moving People and Goods* were undertaken shortly after its adoption and led to new initiatives which greatly improved the efficiency of the previous transportation system.

Regional Rail lines have been grade separated and otherwise improved to offer fast service into Center City from outlying areas during peak travel periods. Rail service improvements have been undertaken to provide the system with higher effective speeds than can be found on parallel highway routes. In fact, drivers—using intelligent vehicle systems in their cars to find the fastest way to Center City—are more often than not directed to the Regional Rail lines. A number of the shorter lines with limited parking have been integrated into the light rail network and offer more frequent service with some express runs. On the remaining lines, station consolidation programs in Pennsylvania coupled with improved rail signal systems, improved highway access, an aggressive feeder bus program and a parking lot expansion program led to much higher patronage. Several of these lines now extend beyond the Delaware Valley to provide connections with other major urban areas. This includes NJ TRANSIT's Atlantic City rail service which was integrated into the system.

In addition, weary drivers no longer fight congestion on major roads connecting suburban areas. Rather, buses together with carpools and a colorful variety of employer-based van services speed many of these people down high occupancy vehicle lanes past congested locations. Toll booth traffic jams are only a distant memory since standardized electronic toll collection was implemented throughout the region during the late 1990s. Drivers of newer vehicles are warned to avoid congested areas through communication with traffic control centers in Pennsylvania and New Jersey. Less detailed advisory information is provided to drivers of older vehicles via changeable message signs at strategic locations and updated radio messages. Special instructions for tourists about roadside features and specific destinations have been integrated with other standard highway signs and also make use of changeable message signs for special events. Comprehensive programs to deal with highway accidents and breakdowns were enacted by both states in cooperation with police departments, vehicle towing and repair services and other agencies. These programs provide regular surveillance, quick response and quick removal of disabled vehicles and other traffic impediments on an ongoing basis.

At the heart of it all remains Center City Philadelphia and the downtowns of Camden, Trenton and Chester. In the year 2020, NJ TRANSIT, PATCO and SEPTA services are fully integrated. NJ

TRANSIT and SEPTA buses travel in coordinated fashion down the streets of Philadelphia and Trenton as traffic lights turn green in advance of their arrival by means of synchronized traffic signal systems. South Jersey commuters arriving on one of the three rail lines can freely transfer to Market-Frankford or Broad Street trains at any of the shared concourses and vice versa. The new *Market West* Station has touched off an upsurge in real estate activity in the burgeoning western half of Center City. The common fare mechanism recognized by all three transit agencies is already responsible for a large amount of transit activity throughout the day and is widely praised in the local tourism industry. The Center City/ Camden fare zone, discounted by the local business community, has also added to the demand for transit service on both sides of the river. Redevelopment efforts around the Camden PATCO stations are increasing in popularity as waterfront related developments and these projects expand toward each other.

The Port of Philadelphia and Camden is one of the most active in the nation thanks in large part to a regional commitment to unified planning, modernization, and customer satisfaction. Joint public-private planning and well defined roles for different portions of the port area yielded many timely improvements. Some of these efforts included: a uniform highway signing program for goods movement, the standardization of drayage costs between facilities, and access improvements - such

as the improved Schuylkill River rail crossing near Grays Ferry Avenue. This in turn created an environment where resources were better managed, transfers became faster and technological improvements were readily implemented.

Other rail improvements had similar effects on freight movement in the region. The new intermodal yard at the former Mustin Field site increased South Philadelphia's capability to handle containers and trailers by truck and rail. Increased clearances over main rail lines south of the port area (required for the use of double height container cars) were strategic in increasing intermodal rail traffic between Philadelphia and points south. Similarly, increased clearances in the Art Museum tunnels enabled the abandonment of the aging elevated line west of 30th Street Station previously used to convey these double height cars.

The capstone of public sector involvement in freight planning was the reconstruction of I-95 in Pennsylvania, conducted entirely in concert with the goods movement community. The "new I-95" features many truck-friendly improvements such as weigh-in-motion stations, a truck rest area in South Philadelphia and redesigned interchanges.

With unparalleled efficiency and a vast array of freight related facilities, the region competes successfully to attract and retain customers for its freight services. The success of the region's exclusive *FastShip* service has become an international symbol of the dedication of

the region to competitiveness in international goods movement. Every year, it seems, new records are set for speed, quantity, variety and dollar value of goods passing through the region. A great deal of this rise in traffic is due to the burgeoning domestic use of the port as the products of Pennsylvania, New Jersey and elsewhere come into the region for export.

ANSWERING THE TOUGH QUESTIONS

So long as facilities and services in the centers and corridors perform in satisfactory fashion, it is presumed that the transportation system is being adequately managed. However, it is well documented that there are many problem locations in the present system where congestion is routine, accidents frequently occur and/or various portions of the transportation system are inaccessible for certain populations. This document attempts to deal with identified problem locations and travel needs in an appropriate and coordinated fashion. It is based, however, on existing studies and plans. It takes for granted existing institutional arrangements and other fundamental features of the present system. In order to effectively deal with the dictates of anticipated land use patterns and the issues of congestion, air quality, safety, mobility and economic competitiveness at a regional level, the region must be prepared to properly identify and deal with basic policy questions.

DVRPC, as the accepted forum for the

planning of orderly growth in the region, is perhaps best suited to provide the forum for such discussions. Indeed, it was in recognizing this role that DVRPC developed *The Policy Agenda* for DIRECTION 2020 which established a series of policies to address various issues of transportation planning. In developing *Moving People and Goods*, key policies from the *Agenda* were combined with facility and program recommendations to begin deal with critical planning issues.

What are some of the fundamental issues that must be addressed and how does DIRECTION 2020 point toward rational solutions? Examples for the four transportation related issue areas follow.

Traffic Congestion

To combat increasing automobile use, is increasing congestion sometimes a desired end to encourage people to take transit? If not, what would need to take place to have less crowded roads and more heavily utilized buses, trolleys and trains and are those steps desirable?

Highway congestion within the centers and corridors was always treated as an undesirable situation. The region, however, should not be responsible for congestion caused by large amounts of unplanned development in outlying areas.

Conventional transit services are not sufficiently extensive to accommodate the travel needs of most of the present highway users. Currently, public transit trips account for roughly five percent of

all person trips in the region. Unless demographic trends and other conditions greatly change between 1990 and 2020, a sizeable number of transit improvements will be needed just to maintain this percentage. A growing percentage of the workforce lives and/or works in locations that are not adequately served by the current transit system during peak periods. At other times of day, travel patterns become considerably more varied and highway congestion normally abates. In some locations, midday congestion is also a problem as people travel from their worksite to restaurants, shops and other destinations. In both of these situations, public transit services have even more difficulty attracting riders away from highway travel. In areas that are currently well served by public transit, selectively expanding and improving transit services can lure additional drivers out of their autos.

The door-to-door convenience and readily available nature of automobile travel are aspects not found in traditional transit services. Employer-based carpool and subscription services operating during peak periods that employees can freely opt into or out of are needed throughout the region and have been established in numerous locations. Also, a guaranteed ride home program should be established for workers who can't conveniently make return trips using their shared ride service. In a similar fashion, midday congestion needs to be addressed through compact, mixed-use development forms, urban circulator routes and other means on a case by case basis.

Another means to reduce highway congestion is to avoid the need for persons to take trips, either during congested travel periods or at all. The widespread cooperation of area employers in allowing their employees to alter their work routines can greatly reduce morning and evening traffic tie-ups. Staggering working hours, for example, can help to spread out the demand for certain congested roads over the course of a business day. Allowing employees to work fewer, longer days means that fewer automobile trips have to be made at all. In some instances, working at least part of the time from home can have the same effect. Modern telecommunications technologies have opened up new possibilities for employees working at home to interact with their employers. Obviously, the extent to which each of these techniques can be used will depend on the needs of individual employers.

An additional factor that needs to be considered in addressing highway congestion is in overcoming the mindset that driving alone, when there are other options, has no detrimental effects. Economic incentive and disincentive programs have been proposed to encourage transit and other shared ride options over driving alone to counter this tendency. These strategies will have to be evaluated further in conjunction with public outreach efforts with the same objective.

Do we need to fully revitalize the older cities and towns to make the transportation system work?

Is the trend toward greater suburbanization of the existing job base an inevitability? Probably not, since Philadelphia and Trenton and a variety of traditional city centers remain the hubs of a great deal of employment and commercial activity. However, their roles as such are declining and, with the opening of major new thoroughfares in the suburbs (such as I-476, NJ 55 and US 422), the pressure toward rapid suburbanization is sure to escalate.

If the older cities and boroughs continue to decline in population and employment, the implication is that the region's large investment in public transit will decline in usefulness for regional travel. The two are inextricably linked. The question then arises as to how responsible the region should be for the collective vitality of these communities. The region needs to band together around programs to foster employment opportunities and improve the quality of life in targeted areas of older cities and towns. The region also needs to act to preempt uncontrolled development of outlying areas. The older cities and towns, conversely, need mechanisms to act upon the concerns voiced by the rest of the region in response to these efforts. They need to target growth in support of regional transportation corridors and act as an intermediary in the face of local opposition. The means for building a consensus around these objectives and developing appropriate courses of action should be explored.

How can the negative transportation impacts of large developments be mitigated

when land use control rests entirely with municipalities?

Where developers are free to choose between municipalities for locating major developments, it is in their own best interest to select the location that will require the fewest improvements—all other factors being equal. Municipalities competing for sources of revenue to keep their tax rates low, avoid driving large scale developments away by asking for sizeable improvements. The ultimate consequences of failing to properly address transportation needs is measured in deteriorated travel conditions for the highway user and/or the taxes needed for improvements that would otherwise not have to be made. To avoid this situation, which sets municipalities against each other, it seems reasonable that county-level approval of large-scale developments should be obtained. The responsibility would then fall to the counties to avoid confrontations with these municipalities while at the same time acting in the best interest of the larger community.

Since municipalities control land use decisions, devolution of some measure of the transportation planning process is also in order. Corridor based, multi-municipal planning of transportation improvements is a fundamental aspect of any strategy to address this concern. One of the objectives in establishing the corridors and study areas in *Moving People and Goods* was to define the areas of common interest and identify the municipalities for such discussions to take place. The fundamental work of DVRPC in

overseeing the multi-municipal planning of corridor improvements will be in determining the regional implications of alternative strategies as they are considered. This is an ongoing process.

Are there opportunities to leverage private support for transportation improvements?

A number of different types of private sector initiatives that may be used in the Delaware Valley have been identified in the Financial Plan chapter of this plan. However, the success of each strategy hinges on its acceptability. Businesses that are inherently affected by the transportation system (i.e., all businesses) must recognize their roles in investing in that system. This being the case, DVRPC through the Transportation Management Associations (TMAs)-needs to monitor the perceived transportation needs of the business community. In some instances, an educational outreach effort on the region's travel conditions and partnering being done in other communities may enroll private sector support. For the most part, however, entrepreneurial ventures and public-private partnerships will emerge from the concerns of the businesses which have identified transportation needs through close observation of local conditions.

Mobility

What forms of transit service do we need? What should be their roles? What issues impact their cost effectiveness?

All modes have traditional markets in the region. The challenge seems to be in finding the most cost effective approach to integrating these elements into a unified system recognizing the strengths and weaknesses of each mode. This approach must recognize these traditional markets and minimize inconvenience to existing transit users.

The general configuration of the system with redundant bus, light rail, heavy rail and commuter rail lines operating on largely independent schedules must be reconfigured. Redundancies should not be allowed where adequate capacity is offered by a single mode. Means of fare payment and fare schedules need to be standardized across all modes. This may also lead to realignment of bus routes and alterations to schedules to avoid direct competition with rail services. All bus and light rail intermodal connections with heavy rail and commuter rail lines must have schedules with designated layovers at these locations to minimize the inconvenience from required transfers.

Buses, when compared with automobiles in the suburbs, tend to run with fewer passengers due to slower travel times, long headways and circuitous routing. Buses in the suburbs need direct, high speed paths between communities where they circulate. Strategies to improve bus travel speed include transitways/HOV lanes and signal preemption.

The reverse is often true for city buses where overloading of passengers during the peak periods can occur. The most

heavily travelled bus route in the SEPTA system is Route C which, for the most part, runs directly above the Broad Street Subway. At first blush, it may appear that the Broad Street Subway and Route C along Broad Street are redundant. Yet the subway and bus are both well patronized in part because each serves its own distinct market. Bus routes and schedules have remained relatively stable over time even in the face of curtailments. This being the case, SEPTA and city officials should closely scrutinize this system for various mechanisms to increase travel speeds and minimize layover times. Traffic signal synchronization to favor transit needs to be pursued along major transit thoroughfares (e.g., Philadelphia's Transit First program).

The heavy rail lines are the backbone of the urban transit system. They provide the highest level of service in the most heavily travelled corridors radiating from Center City Philadelphia. As such, they should be well served by buses and light rail lines operating with timed transfers at intermodal locations. New opportunities for improved transfers with light rail lines will occur with the anticipated return of service on various routes in the city. Aside from the Burlington-Gloucester corridors, no similar opportunities exist to augment the existing PATCO service with other light or heavy rail lines.

Regional Rail lines typically have stations too close together and travel speeds too slow to operate effectively in their service areas. Together, they maintain service schedules more suited to an urban rail

network while the differences in ridership levels by line and by time of day are dramatic. Fundamentally, Regional Rail lines that do not extend into the outlying suburbs (e.g., beyond I-476 to the west or I-276 to the north) should be examined for conversion to alternative service technologies such as those being considered for the R6 Norristown line and R8 Fox Chase line.

In some instances, Regional Rail lines parallel light rail lines between Center City and their outlying destinations. Various means to coordinate these services to serve the same ridership should be investigated. An example of such an approach might include reduced hours on the Regional Rail line with improved connections and the offer of improved off peak light rail service.

Do we need to integrate transit services on both sides of the river?

The primary problem is the need for better integration of services in Center City where transit travel is the greatest. This means that SEPTA and PATCO need to seriously move toward a common fare collection system for their heavy rail lines.

NJ TRANSIT and AMTRAK already have a joint ticketing agreement for the Atlantic City rail service. This needs to be extended to all commuter rail service in the region. A common fare instrument for travel on NJ TRANSIT buses and SEPTA would also serve to increase transit ridership.

Freight Movement

How should we handle the needs of interregional passenger and freight travel (Northeast Corridor, South Jersey, Harrisburg and west)?

Private passenger and freight carriers make investment decisions that change with the dictates of their users. In the interest of accommodating the needs of interregional travel, DVRPC needs to monitor the perceived transportation needs of the passenger and freight transportation communities. Opportunities to improve interregional travel will emerge from the concerns of the businesses which have identified transportation needs through close observation of local conditions. TMA-like organizations are required to gather this input for these communities. DVRPC's Goods Movement Task Force effectively serves in this capacity for the freight community. Because of its singular role with intercity and commuter rail travel, additional efforts need to be made to integrate DVRPC planning efforts with those of Amtrak.

Can we restrict truck travel on our roads and/or ask the trucking industry to bear more of the costs of the road repairs they necessitate and remain an economically competitive region?

There is arguably a subsidy of truck travel in the region, beyond that of automobiles, through the maintenance of roads that are disproportionately damaged by truck travel. The region must remain wary, however, of additional taxes levied on

trucks to recover these costs. Because truck travel is integral to the movement of goods in the region, a tax that impacts the trucking industry is tantamount to an additional tax on all goods produced in and/or destined for the region.

Rather, we must look more closely at how trucks are using the highway network and identify locations where high truck volumes have been harmful to facilities or to the surrounding community. Armed with this information, alternative means to limit truck travel or compensate for these conditions can then be explored. We must also look at the implications of changes to tolls for trucks on their use of the various toll facilities in the region. The goal of this exercise should be to maximize toll revenues from trucks while at the same time minimizing toll evasion. The former addresses the issue of compensation for truck damage to the toll facility. The latter addresses the issue of limiting truck damage to parallel facilities.

Can the interregional shipping needs of a widely dispersed industrial base be met through our existing rail network?

The Delaware Valley region enjoys a high degree of connectivity with the rest of the continent by freight rail lines. The presence of the three Class I freight railroads in the port area of Philadelphia is a highly valuable asset in fostering interstate commerce in the region. It is in the region's collective interest to monitor the economic trends affecting those shippers who currently use the railroads. At the same time, new business—both

inside and outside the region—should be pursued for all three railroads in a healthy, competitive environment. These activities must take precedence over any efforts to encourage local shippers to reevaluate their existing decisions on shipping modes.

Air Quality & Environmental Concerns

Should the region continue to explicitly consider the minimization of vehicle emissions as a criterion for determining which transportation projects are built?

Current federal regulations prescribe that, for regions that do not attain federal air quality standards, all existing and proposed transportation facilities must be analyzed in sufficient detail to permit conformity determinations to be made on their long range plans. The implication of this requirement is that the cumulative effect of individual projects in the plan upon regional air quality is significant and unchanging beyond the period of the plan. In the process of air quality modeling, vehicle characteristics and travel behavior are the predominant factors. On the other hand, expanded highway capacity over time can increase single occupant vehicle trips, and may have adverse impacts on long range travel behavior and air quality.

While most would agree that air pollution could be reduced, the need to model the effects of facility improvements can be both restrictive and misleading. For example, a highway capacity improvement in the latter years of the plan might exact more short term congestion relief than a variety of transit improvements.

However, if the expanded facility becomes congested again beyond the life of the plan, the air quality benefits of the added capacity diminish.

Since it has been difficult, to date, to achieve significant pollution reduction through changes to facilities, perhaps these effects should no longer be part of the planning process. Plan conformity should instead be evaluated for the combined effects of technological improvements as well as regional and subregional programs intended to reduce highway related air pollution. The overall thrust of the plan to limit new highway capacity in outlying areas should be relied upon to reduce the amount of highway related sprawl development in these areas.

Funding

The cost of the transportation plan was limited to assumed available financial resources. If we build its projects and enact its programs will we solve all our transportation problems?

It is not reasonable to assume that the congestion, mobility, maintenance and other transportation problems we presently face will be solved using only existing financial resources. Plan projects and programs form a good foundation for any effort, however, by dealing largely with better management of the existing system.

The success or failure of the plan in tackling these problems will in large part be dependent on two additional factors: the implementation of the land use plan and

securing of adequate supplies of funding for future work. The land use plan is integral to the long term relevance of various transportation improvements. Similarly, additional funding will become increasingly important to insuring their timely implementation.

The vision statement set forth earlier in this chapter included the implementation of a number of the plan's recommended studies. Although these studies are not well enough defined in the plan to determine projected costs, realistic assumptions about potential study recommendations yielded a total figure of \$9,432 million. This would add an additional 45% to the cost of the plan if none of the current projects are to be eliminated.

CONCLUSION — THE PATH WE TAKE

Moving People and Goods deals in broad fashion with fundamental questions about the region's transportation needs through the year 2020. It provides for important facility improvements as well as major programs and policies to both address specific deficiencies in the existing network and provide guidance regarding the critical issues facing the region. In the same way that more detailed study of proposed facilities will be required prior to their implementation, more deliberation with affected parties will be necessary to determine the precise policies to be employed in responding to these issues. DVRPC must continue in its role as regional planning forum to advance these

discussions among stakeholders; holding out the vision of a vastly improved future while educating them about the critical concerns of the present.

* * *

This document began with an account of the torrential rains of July 14, 1994 that temporarily paralyzed travel in the region. Although the event was one beyond human control, it also serves as a powerful reminder, at a personal level, of the importance of transportation and mobility to our daily lives. Transportation systems and services get us to work, the doctor's office, the mall; carry everything we buy, everything we discard and so forth. The transportation plan contained in this document is an attempt to control what we can of our destiny and to meet the travel needs of the region's residents and businesses through the year 2020. □

APPENDIX A

MAP 1: EXISTING HIGHWAY AND RAIL TRANSIT NETWORK

MAP 2: REGIONAL ANALYSIS CORRIDORS

MAP 3: MAJOR TRANSPORTATION INITIATIVES 1995—2005

MAP 4: MAJOR TRANSPORTATION INITIATIVES 2005—2020

MAP 5: MAJOR STUDY CORRIDORS AND AREAS



55. I-95 (Delaware Expressway)

Interchange with Aramingo Avenue and Torresdale Avenue — Complete the interchange ramps providing local access between Aramingo and Torresdale Avenues and I-95.

56. I-95 (Delaware Expressway)

Interchange with PA Turnpike (I-276) — Construct a high-speed, full interchange between I-95 and the PA Turnpike. Widen the PA Turnpike between US 1 (Interchange 28) to US 13 (Interchange 29) from four to six lanes, and construct a second bridge over the Delaware River. Widen I-95 between the PA Turnpike Interchange and PA 413 (New Rodgers Road) from four to six lanes. Construct new toll facilities on the PA Turnpike. The project is being built in partnership with the PA Turnpike Commission who is contributing to its cost. This improvement has been identified by PA DOT as a SOV Project.

57. Construct a King of Prussia Transportation Center at the malls with a distinct, climate controlled waiting area adjoining the shopping complex, multiple bus bays and shelters, and a remote sheltered stop for park & ride patrons.

58. Construct a Lansdale Transportation Center at the existing R5 station by expanding the existing park & ride lot (+300 spaces), reconstructing the station, and adding bus bays.

59. North Philadelphia Transportation Center — restore deteriorated Amtrak station facilities and improvements to local

streets. Encourage redevelopment of the station area.

60. Paoli Transportation Center —

Relocate the Paoli Amtrak/Regional Rail station. Provide for improved parking, bus access and pedestrian travel at the station site.

61. Radnor Transportation Center —

rehabilitate existing SEPTA R5 Radnor station and construct approximately 600 new parking spaces to serve the R5 and Route 100 stations and I-476.

62. Construct a new Thorndale Train Station with approximately 450 park & ride lot spaces to serve SEPTA's R5 Parkesburg line near PA 340.

63. Construct a West Chester Transportation Center with passenger amenities and bus bays.

64. Woodbourne Transportation Center

— Provide 132 new spaces at US 1 and the SEPTA R3 Woodbourne Station.

Between 2005 and 2020

New Jersey

65. Construct an Atlantic City Expressway Interchange with CR 689 (Berlin-Cross Keys Road).

 Pennsylvania

66. To serve the new office development occurring along the western portion of Market Street in Philadelphia, construct a **Market West Subway Station** in the vicinity of 20th-21st Street to provide access to SEPTA's Market-Frankford Line and the Subway-Surface system.

67. Create a **Media Transportation Center** — Extend Route 101 Trolley line to the Media R3 station via Orange Street, remove rail siding and expand Media station parking, upgrade Media Station and Ridley Creek Roads, signalize Ridley Creek Road intersection with Baltimore Pike, and reroute 110 and 118 buses to serve the new center.

68. Develop the **Neshaminy Mall Transportation Center** — requires an integrated development and transportation plan. Interface SEPTA's proposed Street Road Bus Route (Ivyland to Neshaminy) for an additional circumferential bus route, provide additional support by installing transit passenger amenities at the center. Ideally, integrate the US 1 and I-276 interchange area park and ride lot (potential parking demand = 429 spaces) into the plan.

69. Provide an **Overbrook Transportation Center** along SEPTA's R5 Regional Rail line by extending the Route 10 subway-surface line to the Overbrook station.

 SYSTEMWIDE IMPROVEMENTS

The following projects are not specific recommendations of the plan but are illustrative of the categories of lesser improvements to be pursued throughout the transportation system to improve conditions. Their individual air quality benefits, where appropriate, and implementation costs were taken into consideration in the analyses of the plan's recommendations.

Reconstruction of Major Facilities

- Upgrade track and right of way from Winslow Junction to Lakehurst in advance of freight service restoration.
 - Effect vertical and horizontal clearance improvements along southerly route to and from Philadelphia port facilities.
 - Regional Rail Mainline Wayne Junction to Glenside — This project will rehabilitate the northern portion of SEPTA's trunk line, which carries 30 percent of the daily Regional Rail ridership.
 - ADA Improvements Transit — Rail station improvements required to make stations handicapped accessible and purchase of paratransit vehicles and lift equipped buses.
 - PA 309 Corridor Improvements, Montgomery County — A series of projects will upgrade PA 309 in Montgomery County. On the Fort Washington Expressway, between Greenwood Avenue and Welsh Road (PA
-

63), pavement restoration and interchange upgrades will be completed. Between North Wales Road and the Sellersville Bypass, two TIP projects will result in shoulders, and a center turn lane being constructed.

Transit Facilities, Vehicles and Services

- Broad Street Subway — The signal system on the Broad Street Subway is scheduled to be replaced and modernized.
 - Market-Frankford Automatic Train Control — Purchase and installation of new automatic train control signal system.
 - Trenton/Morrisville Area Rail Yard — This project includes the design, engineering and construction of a new rail yard in the Trenton/Morrisville area. The new yard is essential for increasing the efficiency of NJ Transit's Northeast Corridor rail line, and would result in a reduction of operating costs for the service. Funding for this project is also programmed in the NJTPA TIP.
 - Institute an expanded waterfront trolley service along Columbus Blvd. and Front Street. This service should begin at the restored Route 15 LRT line, creating an additional intermodal connection at the Girard Market-Frankford Station. The service would then continue south on Columbus Blvd. below Reed Street to Snyder Avenue then via Snyder to the restored Route 23 LRT line. This route would then provide additional service on the southern portion of Route 23. This alignment leaves open the potential to provide one- or two-way loop service on 11th and 12th Streets and Girard Avenue.
 - Improve the R5 signal system and track from Lansdale to Colmar.
 - Purchase 20 additional Broad Street Subway Cars to increase the line's capacity.
 - Extend Warminster regional rail line from the Warminster station to Ivyland.
 - Improve transit service in the Trenton to Center City corridor by increasing train lengths on the R7 Regional Rail Line and restoring light rail service on SEPTA Routes 15 and 56.
 - Erie Avenue Subway Station — Engineering and intermodal improvements.
 - Harrisburg Rail Line Service — Lease two train sets, provide additional improvements to support rail passenger service between Harrisburg and Philadelphia.
 - City Hall Station — Conceptual engineering of City Hall Station which provides access to numerous locations in and around City Hall. Future funding will provide for final engineering and rehabilitation of the station.
 - Light Rail Transit Upgrade Route 60, 6 and 53 — Acquisition of trolleys and equipment.
 - Eastwick Rail Stations — Construction of new stations and associated parking.
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- **RRD/Rail Transit Control Center** — Development of master centralized control center for railroad, transit, and surface operations.

- **Midvale Bus Garage Construction** — SEPTA plans to construct a garage for 275-300 advanced design standard and articulated buses on the site of the former Midvale/Heppenstal Steel Company. Besides the garage, the site will house peripheral operations, including fare collection and farebox repair, quality control operation, and a central tire shop for the City Transit and Suburban Transit Division bus fleets. The project includes construction of the bus garage and purchase and installation of the maintenance and service operations.

- **Extension of Route 66 Trolley** — Extend service of the Route 66 trackless trolley in the northeast section of Philadelphia to the Franklin Mills shopping mall—a distance of approximately two miles.

- **Suburban Station Improvements** — Perform concourse and platform improvements.

- **Penn's Landing Ferry** — Construct an enclosed passenger terminal.

Park and Ride Lots

Construct park and ride lots at the following locations on US 130:

- interchange with US 206,
- NJ 73,
- Creek Road (CR 636), and
- interchange with NJ Turnpike.

- Locate satellite parking areas with express shuttle link to the PATCO Hi-Speed Line.

- Increase the parking capacity at PATCO stations, most notably Woodcrest Station.

- Construct a park and ride lot at relocated NJ Tpk. Interchange #3, if found feasible.

- Construct a park and ride lot at NJ 55 and Deptford Center Road.

- Construct a park and ride lot near the intersection of NJ 38 and CR 541.

Construct park and ride lots at the following NJ Turnpike interchanges:

- I-195, and
- US 206.

Construct park and ride lots at the following I-295 interchanges:

- NJ 38,
- NJ 70, and
- NJ 168.

- Rehabilitate and increase parking capacity at SEPTA's West Trenton rail station.

- Increase the potential of the existing R6 Norristown rail station at Conshohocken to attract park and ride users by improving the parking capacity of the station and providing guidance signs between the station and I-76 as well as I-476.

- Improve access to intercity rail service by pursuing Amtrak service and separate parking arrangements at the SEPTA R2 Baldwin site.

- Improve carpool/vanpool capabilities through creation of a park and ride lot near the intersection of US 30 and US 202. Such a parking area should provide easy access to and from all arterial routes in this vicinity.

- Expand parking at the Norristown Transportation Center.

Construct park and ride lots at the following US 422 interchanges:

- Township Line Road in Limerick,
- Egypt Road in Upper Providence,
- Sanatoga Road in Limerick,
- PA 29 in Upper Providence, and
- PA 100 in North Coventry.

Construct park and ride lots at the following PA 9 (NE Extension) interchanges:

- PA 663/PA 9 in Milford Twp.,
- PA 63/PA 9 in Towamencin Twp..

Construct park and ride lots at the following locations on PA 309:

- PA 152 in Sellersville Borough,
- US 202 in Montgomery Twp..

- Expand parking at the Somerton Station on the R3 line. Integrate future development and transportation services to establish a transportation center at the station area.

- Construct a park and ride lot near the interchange of PA 413 and I-95.

Construct the proposed I-476 park and ride lots. First priority should be given to lots serving SEPTA rail lines. The following locations have been identified:

- *Baldwin:* I-95 at relocated SEPTA R2 Crum Lynne Station. The relocated Crum Lynne station platforms at Baldwin should be constructed south of the track interlockings in order to preserve access to the inner tracks for future enhanced express service opportunities negotiated with Amtrak.

- *Wallingford:* I-476 at relocated SEPTA R3 Wallingford Station,

- *Baltimore Pike:* I-476 at Baltimore Pike with added SEPTA Route 101 stop,

- *West Chester Pike:* I-476 at PA 3,

- *Radnor:* US 30 interchange with I-476 on the R5 Paoli line and the Norristown High Speed Line,

- *Conshohocken:* I-476 at Matson Ford Road, and

- *Plymouth Meeting:* I-476 at Germantown Pike, Chemical Road and potential Cross County Metro route.

Construct park and ride lots at the following locations:

- I-95/PA 452 or Chichester Avenue,
- I-95/PA 420,
- US 322/PA 452,
- US 1/US 322, and
- US 202/PA 926.

- Construct additional off-street parking at 30th Street Station for short-term and long-term parking.

■ **Regional Rail Park and Ride Lot Program** — Engineering and construction of park and ride lots at stations along the R3, R5 & R6 lines. The following stations have been identified by SEPTA for park and ride lots: Forest Hills on the R3 West Trenton line; Elwyn on the R3 Media/West Chester line; Colmar, Doylestown, and Fort Washington on the R5 Lansdale/Doylestown line; Devon, Malvern, and Whitford on the R5 Paoli/Parkesburg line; and Spring Mill on the R6 Norristown line.

■ **Intermodal/Park and Ride Facilities**— Engineer and construct park and ride lots at regional rail stations near I-95 & I-476 interchanges . Lots programmed include Woodhaven Road and the Cornwells Heights Station on the R7 Trenton line; Main Street and the Yardley Station; Bristol Road near US 1 and the Neshaminy Falls station; Street Road, PA 132, west of US 1 and the Trevoise station; US 1 and the Woodbourne station; and the vicinity of PA routes 63 and 532 and the Philmont station on the R3 West Trenton line.

Ramp Construction

■ Construct a full interchange between US 130 and NJ Turnpike. Reconstruct interchange ramps to make a more direct connection.

■ Upgrade NJ 55 interchange at Deptford Center Road to permit all turning movements.

■ I-295 — Interchange Improvements Exits 14 to 20 — Reconstruction of the

segment between Delsea Drive (NJ 47) and Church Street in West Deptford Township was completed FY 93. The programmed improvements will relocate interchanges, upgrade ramp designs, and lengthen acceleration and deceleration lanes to meet interstate design standards.

■ PA 611 (Broad Street) — Realignment of the interchange at I-76 in South Philadelphia.

■ Broad Street — Ramp construction at PA 611 in Doylestown.

■ Other I-95 Improvements — Interchange improvements include ramp construction at PA 332 in Bucks Co. and PA 352 in Delaware Co. and lighting installation at PA 420 in Delaware Co. Restoration of the facility's pavement in Bucks County is also scheduled.

■ I-76, Schuylkill Expressway on- and off- ramp construction at Henderson Road.

■ PA 100 Improvements — The focus of this group of projects is to improve the signalized intersections through signal improvements and the addition of turning lanes. The construction of a new northbound off-ramp and the extension of acceleration and deceleration lanes will provide better access to PA 724.

■ Provide a full interchange at I-95/295 and NJ 31.

■ Upgrade the US 1/PA 352 interchange to a full cloverleaf design. Provide two through lanes per direction on PA 352 in this vicinity.

- Construct a ramp from westbound Baltimore Pike to northbound Media Bypass.
- Install weaving ramps at Kerlin Street to/from I-95 north (integrate with I-95 Intermodal Project)

Advanced Signal Systems and Signing

- Replace pedestal mounted traffic signals with overhead mounted signals on arterial routes in Chester and West Philadelphia. Provide for improved signal coordination and transit vehicle override (as appropriate) with replacement.
- Install a closed loop traffic signal system on US 130 in Burlington City connecting Keim Blvd., Mott Avenue (CR 632), High Street (CR 541), Jacksonville Road (CR670/CR 541 Truck). The Burlington-Bristol Bridge should be interconnected with the signal system to trigger warning signs of bridge openings.
- On US 30, provide turn lanes at signalized intersections and interconnect traffic signals to improve traffic flow between CR 686 (Gibbsboro Road) and US 130.
- Interconnect traffic signals and add turn lanes along CR 561 between NJ 154 and CR 673.
- Add left turn lanes at all signalized intersections and interconnect signals on NJ 168 from Evesham Road to US 130.
- Interconnect traffic signals for progressed traffic flow along PA 611 from

Bristol Road south to Broad Street (within the Philadelphia city limits), provide bus pull-outs and shelters at major transit loading points.

- Interconnect traffic signals for progressed traffic flow along PA 263 from Bristol Road south to PA 611, provide bus pull-outs and shelters at major transit loading points.
- Interconnect traffic signals for progressed traffic flow along Easton Road from PA 611 to Cheltenham Avenue, provide bus pull-outs and shelters at major transit loading points.
- Interconnect traffic signals for progressed traffic flow along Cheltenham Avenue/Broad Street from Easton Road to Broad Street.
- Provide a coordinated signal system along Bustleton Avenue.
- Interconnect traffic signals along PA 73 within the Philadelphia city limits (Cottman Avenue). Close/consolidate access points to the Cottman Avenue portion of the corridor.
- Interconnect traffic signals for progressed traffic flow along PA 3 from 69th Street to PA 252.
- Interconnect traffic signals for progressed traffic flow along PA 291 from US 13 to Philadelphia City Limit.
- Interconnect traffic signals for progressed traffic flow along Baltimore

Pike from Ashland Avenue to Church Lane.

Intersections and Spot Locations

- Construct new access road and repair rail access to Broadway Terminal.
 - Expand terminal entrance and repair main rail spur leading into Beckett Terminal.
 - New Jersey Port Terminal Capacity Extensions at facilities west of Ferry Avenue.
 - Improve rail access into and out of South Philadelphia terminals and facilities, such as AmeriPort and Packer Avenue Marine Terminal. Improvements must address operational bottlenecks and through lines between the ports and southbound and westbound routes.
 - Provide a new access road to serve freight facilities at Philadelphia International Airport.
 - Provide a rail spur and siding to Pier 98 Annex.
 - NJ 31 Improvements — NJ 31 will be reconstructed including curbing and shoulders. Three jughandles will be constructed between I-95 and the Pennington Circle. The circle will be cut through and new signalization will be installed. The highway will be widened from two to four travel lanes from the circle to south of the Conrail overpass.
 - Collingswood Circle (US 30/US 130) Cut-Through — This project will cut through the Collingswood Circle and reconstruct a 0.7 mile segment of US 130 from south of the circle to the Cooper River. The segment of US 130 from the Cooper River to north of the Airport Circle is presently undergoing reconstruction, and a cut-through of the Airport Circle is nearing completion. This project is a continuation of the current construction program.
 - US 30 Improvements — These projects improve traffic flow at isolated locations throughout the corridor by reducing congestion at intersections through signal improvements and construction of turn lanes. Construction of a pedestrian underpass is also included in the vicinity of Villanova University. In Chester County, the bridge in front of the Exton Mall will be replaced and a new eastbound loop off ramp is also programmed from US 30 Bypass onto NB PA 113.
 - PA 29 Improvements — Two of these projects improve traffic flow at isolated locations in the corridor through signal and intersection improvements and the construction of a new US 422 SB on-ramp in Montgomery County. The third project proposes to replace a bridge over the Schuylkill River.
 - Preserve capacity of US 30/PA 100 intersection by creating a ring road for all major nearby commercial properties in all four intersection quadrants.
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- Convert one EB lane of US 322 to an HOV bypass lane between PA 452 and I-95.
- Address turn radius, weaving and capacity problems on Matson Ford Road in the Plymouth/Conshohocken area.
- PA 113 Improvements — Two very different strategies are pursued to address the congestion. The Chester County projects proposed intersection improvements and minor widening while the Montgomery County projects suggest constructing two lane relocations to bypass congested villages.
- PA 463, Horsham Road — Widen to four lanes from PA 611, Easton Road to Norristown Road.
- PA 52 — Two lane relocation between PA 926, Street Road and Kennett Pike.

Access Controls

- Access management is required along US 130 and NJ 33.
 - Access management is required on US 130 between Airport Circle and the Conrail Line (Delair Bridge). This improvement should be coordinated with the reconstruction of US 130.
 - Apply access management techniques to US 130 from the vicinity of Millside Shopping Center to Creek Road (CR 636) and from Delanco Road (CR 624) to the Willingboro/Burlington Line.
 - Consolidate access points along NJ 38 and Haddonfield Road in Cherry Hill Township where shared drives are possible.
 - NJ 41 Improvements — Dualization of this road will provide a much needed increase in capacity. Other improvements include provisions for left turn lanes, intersection improvements at Deptford Center Road and Clements Bridge Road and relocation and/or additional connecting ramps from NJ 42 freeway.
 - Initiate access controls on CR 541 between I-295 and CR 630.
 - Initiate access controls on CR 541 in Mt. Holly from CR 630 to CR 541 Spur.
 - Consolidate driveway and median openings, construct acceleration and deceleration lanes and interconnect signals on NJ 42 between NJ 168 and CR 655 (Fries Mill Road).
 - Close access points along NJ 73 in the vicinity of Moorestown where shared drives are possible.
 - Consolidate difficult, unsignalized intersections and/or movements in Bordentown.
 - Implement an entrance consolidation plan for Baltimore Pike between PA 420 and Bishop Avenue in consultation with the affected businesses and neighborhood organizations. The plan should provide for closure of selected side streets, replacement of the continuous center turn lane with a median where allowable,
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installation of bus turnouts, and a coordinated signal system and other traffic flow improvements as identified. A program of uniform business and roadway signing adjacent to the travel lanes should also be conducted.

■ Improve traffic flow and safety near SEPTA's Morton Station: Realign Morton Avenue south of US 420 to a new signalized intersection with Franklin Avenue; realign Yale Avenue to connect with Mitchell Avenue; grade-separate PA 420 at Morton Station. Provide sidewalks and ramping to change between inbound and outbound platforms at the station. Install barrier fencing to prevent pedestrians from crossing tracks in the station area. Close the Amosland Road grade crossing. Provide a new connection between Church Road and PA 420 near Walnut Street. Close the Church Road grade crossing.

■ Improve traffic flow and safety at SEPTA's Primos Station by grade separating Oak Lane and SEPTA's R3 Regional Rail Line. Provide sidewalks and stairwells to change between inbound and outbound platforms at the station. Install barrier fencing to prevent crossing tracks in the station area.

■ Implement traffic flow and access management improvements on US 322 between US 30 and Amtrak/SEPTA R5 line.

■ Pursue access management programs for the Pottstown to King of Prussia corridor for PA 23, PA 100, PA 113 and PA 724.

■ Pursue highway access management strategies as development proceeds along PA 611 and PA 263 north of Bristol Road. Strategies to manage or control access include dividing the highway, consolidating access points and establishing minimum driveway and signalized intersection spacing standards. A design study should be undertaken first so that a plan can be developed and assessed prior to implementation.

■ Access management is required along the Cottman Avenue shopping district. Intersection improvements are required at Cottman & US 1 and Cottman and Bustleton Avenues.

■ Pursue access management strategies along PA 532 (Bustleton Pike) — Consolidating driveways north of Byberry Road to reduce the frequency of turning points, establishing minimum spacing criteria between traffic signals and interconnecting traffic signal operation are likely candidate strategies to improve traffic flow.

■ Apply access management techniques to US 30 Bus., PA 100, US 202, US 322 and PA 926 in the Chester to Exton/Downingtown corridor.

■ The Philadelphia Streets Department is working with PennDOT to develop the initial stages of an advanced electronic traffic control system. The Center City traffic system should be expanded throughout Center City (as an ongoing activity).

Congestion Management Systems

- Continue to develop electronic toll collection technology for toll facilities.
 - Traffic Operations Center — Burlington, Camden, & Gloucester Counties — Develop and implement state-of-the-art traffic management techniques in the South Jersey area, including a traffic operations center, incident management and mitigation, highway courtesy patrols, highway advisory radio, operation and maintenance of computerized traffic signals, traffic surveillance, variable message signs, and other techniques.
 - Expand the TIMS program to the Schuylkill Expwy., PA Tpk. and limited access portions of US 202. The TIMS program incorporates variable message signs, incident detectors, closed circuit television (CCTV), and ramp metering into a comprehensive incident management program directed by Penn DOT's traffic operations center. TIMS program work should be coordinated with SEPTA, DRPA and other affected agencies as appropriate.
 - Apply access management techniques to US 1, US 3, US 30, PA 291 and US 322 in Delaware County. ☐
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**IMPROVED TRANSPORTATION
CONNECTIONS***Between 1995 and 2005*

New Jersey

47. Burlington City Transportation Center — Construct a transportation center with a park & ride lot and passenger amenities at Broad and High Streets in Burlington.

48. Develop the Cherry Hill Mall Transportation Center — requires an integrated development and transportation plan. Establish a new circulator bus route to the Cherry Hill rail station, provide additional support by installing passenger amenities at the center and increasing feeder bus service.

49. Northeast Corridor Line Hamilton Transit Complex — This NJ Transit project incorporates two facilities critical to the bus and rail operations of central New Jersey. The bus maintenance facility will provide maintenance and storage capabilities for 80 buses, and the rail station includes high level platforms, a pedestrian tunnel or bridge and parking for 1,700 vehicles.

50. Develop the Moorestown Mall Transportation Center — requires an integrated development and transportation plan. Increase feeder bus service to the center and provide additional passenger amenities.

Pennsylvania

51. Bensalem Transportation Center — Provide 1,000 parking spaces at Woodhaven Road and the SEPTA R7 Cornwells Heights Station.

52. Chester Transportation Center — Rehabilitate the station serving the R2 Wilmington Regional Rail Line, install elevators, and reconstruct bus loop.

53. FastShip Terminal — construct a high technology terminal facility and related highway and rail access improvements intended to serve FastShip Atlantic port activities. This terminal is to be located on the site of the Philadelphia Naval Ship Yard (PNSY).

54. Frankford Terminal Improvements — Reconstruction of the existing center into a multi-modal transportation center. The proposed terminal consists of a main terminal building with an elevated track platform and a 1,000 car parking garage. Bus and trackless trolley activities will be divided among four basic areas within the center. The existing center serves 52,000 riders per average weekday and the improvements will create a more functional, yet user friendly, center that will improve service and provide easier and safer transfers among modes.

Also, eliminate on-street parking at Frankford Terminal to improve traffic flows through the area.

32. US 202 (Dekalb Pike) between Johnson Hwy. and Montgomeryville — Widen to four lanes.

33. US 1/US 322 from US 202 to US 322 in Concord Twp — Widen to six lanes.

Also, **US 322 (Conchester Road)** — An environmental analysis and preliminary engineering study is investigating a number of improvement scenarios including increasing the capacity of this facility by widening from two to four lanes, a five lane highway (four travel lanes and a center turn lane), median barrier, jug handles at major intersections, and other intersection improvements. PA DOT has identified this improvement as a SOV Project.

Between 2005 and 2020

New Jersey

34. CR 536 Spur (Williamstown-New Freedom Road) — Widen to four lanes from NJ 42 to CR 706 (Erial New Brooklyn Road), and add movements at the Atlantic City Expressway.

35. CR 706 (New Brooklyn-Blackwood Road) — Widen to four lanes from CR 536 Spur (Williamstown-New Freedom Road) to CR 689 (Berlin-Cross Keys Road).

36. Extend Kuser Road easterly to Robbinsville Road (CR 526).

37. NJ 70 (Marlton Pike) from east of Marlton to Medford — Widen from two lanes to four lanes.

38. US 130 (Bordentown-Burlington Road) — Widen between Wood Street and US 206 to six lanes, construct median barrier, jughandles, and widen major crossroad intersection approaches.

39. Widen US 322 (Swedesboro-Bridgeport Road) from US 130 to NJ Turnpike to four lanes throughout.

Pennsylvania

40. County Line Road from PA 309 to PA 611 — Widen to two lanes per direction with center turn lane.

41. Germantown Pike between PA 363 and North Wales Road — Widen to four lanes.

42. Henderson Road from South Gulph Road to US 202 — Widen to four lanes.

43. PA 63 (Welsh Road) from US 202 to North Wales Road — Widen to four lanes.

44. PA 100 (Pottstown Pike) from US 30 to PA 401 — Widen to three lanes per direction.

45. US 30 (Lincoln Highway) from US 202 to Whitford Road — Widen to two lanes per direction with center turn lane.

46. West Trenton Avenue between US 1 and the Delaware River — Widen from 2 to 4 lanes.

26. I-95/PA 413 Interchange and PA 413 (New Rodgers Road) Widening — This regional highway improvement consists of two separate projects. The first project, an improved I-95/PA 413 interchange, will construct a southbound off ramp from I-95 to PA 413. The second project will widen PA 413 to four lanes between US 13 to north of Ford Road. PennDOT has identified these projects as SOV Projects. Both projects complement the proposed I-95/PA Turnpike Interchange improvement, which will widen I-95 from four to six lanes between the PA Turnpike and PA 413.

27. PA 611 (Easton Road) — Signal improvements and adding a lane between Blair Mill Road and Pennsylvania Turnpike.

28. Sumneytown Pike — Intersection improvements and adding a lane between South Broad Street and West Point Pike, also relocation of Allentown Road.

29. Swedesford Road — (see **Project No. 31** below for narrative)

30. US 1 (Baltimore Pike) Improvements — The project improves traffic flow through minor widening, and the installation of median barriers, left turn lanes and jughandles. A small bridge maintenance project is also included.

31. Widen US 202 between the Delaware State Line and I-76 from four to six lanes.

Section 100 (Delaware State Line to West Chester): Four alternatives are under

review. One alternative would widen the 7.8 mile segment from four to six lanes. Other improvements under investigation include median improvements, intersection improvements, improved signal coordination and a grade separated intersection at Painters Crossroads (US 1/US 322). Improvements to this section of US 202 have been identified by PA DOT as a SOV Project.

Section 300 (US 30 to PA 252): The intent of this project is to increase the capacity of US 202 by widening an 8.9 mile section from four to six lanes.

Section 400 (PA 252 to I-76): This project will significantly increase the capacity of US 202 by widening a 2.6 mile section from four to six lanes. Construction will entail improvements to the I-76 interchange, namely adding a second lane to the ramp between northbound US 202 and eastbound I-76. Other interchange improvements will occur at US 422, Warner Road, and Swedesford Road (**Project No. 29**). The Warner Road and Old Eagle School Road bridges will be replaced and a new ramp will be constructed parallel to US 202 that will connect an extended Devon Park Drive and the US 422 interchange to eastbound I-76. PennDOT has identified this as a SOV Project.

Additionally, Section 500 (I-76 to Johnson Highway): Alternatives analysis is currently underway. Improvement alternatives include the reconstruction of Markley Street with minor widening, signal improvements and turn lanes.

22. Market-Frankford Line Reconstruction/New Cars —

Frankford Elevated Reconstruction

Program: This project will reconstruct a 5.2 mile section of the elevated structure, including eleven stations. In addition to structural improvements, the tracks, signals, communication and power systems will be replaced.

Market-Frankford Infrastructure

Improvements: This project will provide for the rehabilitation or replacement of infrastructure and associated components of the subway-elevated line. A systems analysis will address all pertinent operational issues concerning the integration of the new Market-Frankford cars. System components include track improvements, signal system rehabilitation, maintenance facility renovation, and power system rehabilitation.

Market-Frankford Car Acquisition: This project will provide for the acquisition of up to 220 new subway-elevated cars. The new cars will enhance passenger safety, security, and comforts; meet Americans with Disabilities Act (ADA) requirements, and include self-diagnostic capabilities for key system components.

Market Elevated Reconstruction: This project will provide for the rehabilitation of deteriorated structural components on the Market Street Elevated portion of the Subway-Elevated line.

23. North Philadelphia Light Rail Transit System — Infrastructure

Improvements — This project provides for improvements to light rail infrastructure related facilities, including storage and maintenance shop, power distribution system and substations, tracks, and loops along trolley Routes 15, 23, 56.

Light Rail Vehicle Purchase Program:

Purchase of up to 70 new state-of-the-art light rail vehicles that will operate on Route 23, from Chestnut Hill to South Philadelphia; Route 15, from Port Richmond to West Philadelphia; and Route 56, from Northeast Philadelphia across North Philadelphia. These three lines carry approximately 50,000 average weekday riders.

24. PA 63 (Welsh Road) — This improvement will provide a significant increase in capacity by widening this road to a four lane facility from Tennis Avenue to Kimball Avenue in Montgomery County. The widening will require intersection improvements at various intersections along this corridor. PA DOT had designated this project as a SOV Project.

25. PA 291 (2nd Street/4th Street) — This project is set-up in two sections. Improvements to the section between Ridley Creek and Franklin Street include a relocation and five lane widening with a center turn lane. The section from Franklin Street to Trainer Borough will also be widened to five lanes with a center turn lane. Construction will take place in stages with the eastern segment to advance first.

lanes at intersections between CR 613 and Moorestown-Centerton Road.

9. CR 534 (Blackwood Clementon Road) — Widen to 4 lanes and interconnect signals between NJ 42 and CR 673 (Laurel Road)

10. CR 555 (Main Lake Road) between US 40 (Harding Highway) and Wheat Road — Reconstruct and widen.

11. CR 571 (Princeton-Hightstown Road) between Wallace-Cranbury Road and Clarksville Road — Widen to four lanes, add signals and install left turn lanes.

12. CR 689 (Berlin-Cross Keys Road) — Widen and install new traffic signals from NJ 47 to US 30 and construct Cross Keys Bypass.

13. Extend Deptford Center Road across NJ 55 and connect to Almonesson Road.

14. NJ 42 (North-South Freeway) — This facility will be widened to add a fourth lane in each direction. The widening will take place in the existing grass median, minimizing the need for right of way acquisition.

15. US 1, Brunswick Pike — Widening to six lanes from CR 533, Quaker Bridge Road to Alexander Road.

Pennsylvania

16. Allendale Road — Widen to 48 Feet between Wills Blvd. and Crossfield Road, also install signal at Elliot.

17. Blair Mill Road — Blair Mill Road will be widened to two lanes in each direction between County Line Road and PA 63. Improvements to the intersections along Blair Mill Road are also included. This project will significantly increase the capacity of this facility and it has been identified by PA DOT as a SOV Project.

18. Chestnut Street Transitway Reconstruct the streetscape including the cartway, the sidewalks and sidewalk furniture.

19. County Line Road — Reconstruction and widening to four lanes from Buck Road to New Road in Upper Southampton Township, Bucks County.

20. Dresher Road — Widening to 48 Feet by adding a lane in each direction between Horsham Road (PA 463) and Welsh Road (PA 63).

21. Construct the I-95 Intermodal Mobility Project; include features to address port access issues as may be needed.

Also, restore lane balance on I-95 by adding one lane in each direction at the I-476 interchange (between mileposts 5.9 and 6.7). (integrate with I-95 Intermodal Project)

APPENDIX B

The following 69 projects are specific recommendations of the plan to improve regional travel conditions. Their individual air quality benefits, where appropriate, and implementation costs were taken into consideration in the analyses of the plan's recommendations.

NEW CORRIDOR FACILITIES AND SERVICES

Between 1995 and 2005

New Jersey

1. Burlington-Gloucester Transit Lines — Implement fixed guideway transit service between Center City and Mt. Holly as well as between Center City and Glassboro.

2. NJ 92 (Hightstown Bypass) —Construction of the Hightstown Bypass section of NJ 92 will provide a new highway that will extend from the vicinity of the NJ Turnpike and NJ 33, east of Hightstown, to the vicinity of US 130 and CR 571. NJ DOT had identified this improvement as a SOV Project.

Pennsylvania

3. Restore Regional Rail service to Newtown via preferred alignment.

4. PA 63 (Woodhaven Road Extension) — Construct a four lane expressway extending the existing

Woodhaven Expressway to Philmont Avenue and replace Byberry Bridge. This project has been identified by PA DOT as a SOV Project.

5. Provide a new commuter aircraft runway (8-26) at Philadelphia International Airport to increase airport capacity and reduce delay in bad weather. Initial FAA grants were received in FY '94. Additional support will be needed for land acquisition and construction.

6. Facilitate R3 travel to and from the western portion of the {Painters Crossroads to Center City} corridor and points south and west by restoring R3 rail service to Wawa with a park and ride lot at US 1.

Between 2005 and 2020

7. Realign US 202 from Montgomeryville to Doylestown Bypass as a four lane, divided highway.

IMPROVED CORRIDOR FACILITIES AND SERVICES

Between 1995 and 2005

New Jersey

8. Creek Road (CR 636) —This improvement calls for the reconstruction of the existing lanes from a pavement width of 20 feet to a width of 40 feet with two 8 foot shoulders, including reconstruction of five culverts and addition of auxiliary

APPENDIX B

Detailed Project Descriptions and Suggested Systemwide Improvements

**NEW CORRIDOR FACILITIES AND SERVICES
IMPROVED CORRIDOR FACILITIES AND SERVICES
IMPROVED TRANSPORTATION CONNECTIONS
SYSTEMWIDE IMPROVEMENTS**